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Taxonomic Studies on the Marine Mollusca of southern Africa and Mozambique. Part 1

by

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SYNOPSIS

Twenty-one new species are described: *Acmaea* (*Tectura*) *maraisi* (Acmaeidae); *Solariella durbanensis*, *Gibbula* (*Calliotrochus*) *cummingae* (Trochidae); *Parviturboides habrotima*, *Uzamakiella natalensis* (Vitrinellidae); *Couthouyia pasithea*, *C. mzambana* (Fossaridae); *Rissopsis tuba* (Rissoidae); *Epitonium pteroen* (Epitoniidae); *Heliacus* (*Mangonuia*) *smithae* (Architectonicidae); *Coralliophila* (*Liniaxis*) *groschi* (Coralliophilidae); *Mitrella graevei* (Columbellidae); *Kanamarua rehderi* (Buccinidae); *Volvarinella procrita*, *Marginella stuarti*, *M. youngi*, *M. nevillana* (Marginellidae); *Paracuneus cockae*, *Tritonoturris obesa*, *T. phaula*, *Isodaphne albolineata* (Turridae).

New synonyms: *Nerita tomlini* Turton, 1933 = *Neritina auriculata* Lamarck, 1816 (Neritidae); *Fossarus globulosus* Turton, 1932 = *Couthouyia incerta* (Turton, 1932) (Fossaridae); *Epidromus crebrilirata* Sowerby, 1903 = *Nivitriton fictilis* (Hinds, 1844) (Buccinidae); *Columbella dibolos* Barnard, 1964 = *Mitrolumna stepheni* (Melvill & Standen, 1897) (Turridae); *Lithophaga barnardi* Boshoff, 1965 = *L. lima* (Lamy, 1919) (Mytilidae).

New combinations: *Spectamen franciscana* (Barnard, 1963)—ex *Solariella; Oxystele tigrina* (Anton, 1839)—ex 'Chemnitz' (non-binomial) (Trochidae); *Brookula gemmula* (Turton, 1932)—ex *Scalaria; Liotella cancellata* (Krauss, 1848)—ex *Solarium* (Cyclostrematidae); *Orbitestella gemmulata* (Turton, 1932)—ex *Homalogyra* (*Orbitestellidae*); *Couthouyia incerta* (Turton, 1932)—ex *Fossarus* (Fossaridae); *Coralliophila* (*Rhombothais*) *rosacea* (E. A. Smith, 1903)—ex *Latiaxis* (Coralliophilidae); *Nivitriton fictilis* (Hinds, 1844)—ex *Colubraria* (Buccinidae); *Paracuneus platystoma* (E. A. Smith, 1877)—ex *Drillia*, *Tritonoturris natalensis* (Barnard, 1958)—ex *Philbertia*, *Mitrolumna stepheni* (Melvill & Standen, 1897)—ex *Mitromorpha* (Turridae).

New records: *Turcica stellata* A. Adams, 1864, *Ethalia striolata* A. Adams, 1855 (Trochidae); *Neritina auriculata* Lamarck, 1816 (Neritidae); *Sigaretornus planus* (A. Adams, 1850) (*Vitrinellidae*); *Strombus wilsoni* Abbott, 1967 (Strombidae); *Coralliophila erosa* (Röding, 1798), *C. violacea* (Kiener, 1836), *C. costularis* (Lamarck, 1822), *C. squamosissima* (E. A. Smith, 1876), *Quoyula monodonta* (Blainville, 1832), *Rapa rapa* (Linné, 1758), *Magilus antiquus* Montfort, 1810 (Coralliophilidae); *Kermia tessellata* (Hinds, 1843), *Daphnella lymneiformis* (Kiener, 1840), *D. rissoides* (Reeve, 1843), *D. delicata* (Reeve, 1846), *D. cyclophora* (Deshayes, 1863), *Mitrolumna stepheni* (Melvill & Standen, 1897) (Turridae); *Lithophaga zitteliana* Dunker, 1882, *L. lima* (Lamy, 1919) (Mytilidae); *Hiatula clouei* Bertin, 1880 (Psammobiidae); *Petricola madreporica* (Jousseaume, 1859) (Petricolidae).

Rejected records: *Umbonium vestiarum* (Linné, 1758) (Trochidae); *Petricola lajonkairei* Payraudeau, 1826, based on *P. divergens* (Gmelin, 1791), juv. (Petricolidae); *Psammotaea donacioides* Reeve, 1857, based on *Hiatula clouei* Bertin, 1880 (Psammobiidae).

INTRODUCTION

The present series of papers will serve as a vehicle for the description of new taxa, new synonyms and new records, and for non-monographic revisions of minor groups.

Locality data will be grouped into a series of subregions, for the most part based on biogeographical rather than political criteria. These are defined thus:

SOUTH WEST AFRICA: Kunene River to Orange River.

SOUTH AFRICA:

ATLANTIC CAPE COAST: Orange River to Cape Point.
FALSE BAY: Cape Point to Cape Hangklip.
AGULHAS AREA: Cape Hangklip to Still Bay (Stilbaai).
TSITSIKAMA COAST: Still Bay to Cape St Francis.
EASTERN CAPE PROVINCE: Cape St Francis to Kei River.

SOUTH AFRICA (continued):
  NATAL: Mtamvuna River to Tugela River.
  ZULULAND: Tugela River to Ponta de Oura (Mozambique border).
TRANSKEI: Kei River to Mtamvuna River (including Pondoland).
MOZAMBIQUE:
  SOUTHERN MOZAMBIQUE: Ponta de Oura to Sofala Bay.
  CENTRAL MOZAMBIQUE: Sofala Bay to Angoche (Antonio Enes).
  NORTHERN MOZAMBIQUE: Angoche to the Rovuma River.

Subdivision of South West Africa will probably prove advisable once the southern limit of the West African biogeographical region is established.

Abbreviations: N.M. = Natal Museum; Z.M.B. = Zoologisches Museum, Berlin; C.S.I.R. = Council for Scientific and Industrial Research, Durban.

Class GASTROPODA

Family Acmaeidae

Genus *Acmaea* Eschscholtz, 1833

Type species (subsequent designation Dall, 1871): *A. mitra* Eschscholtz, 1833.

Acmaea (Tectura) maraisi sp. nov. (figs 1–3)

Diagnosis: Conical, height 0,66–0,86 of length; apex blunt, not hooked, just anterior to middle; ventral margin concave; fine growth lines only, surface silky; umbo with U-shaped brown mark, rest whitish (sometimes pinkish in juveniles) with 9–13 rays of golden-brown dots or streaks, interior white; length 6,3 mm.

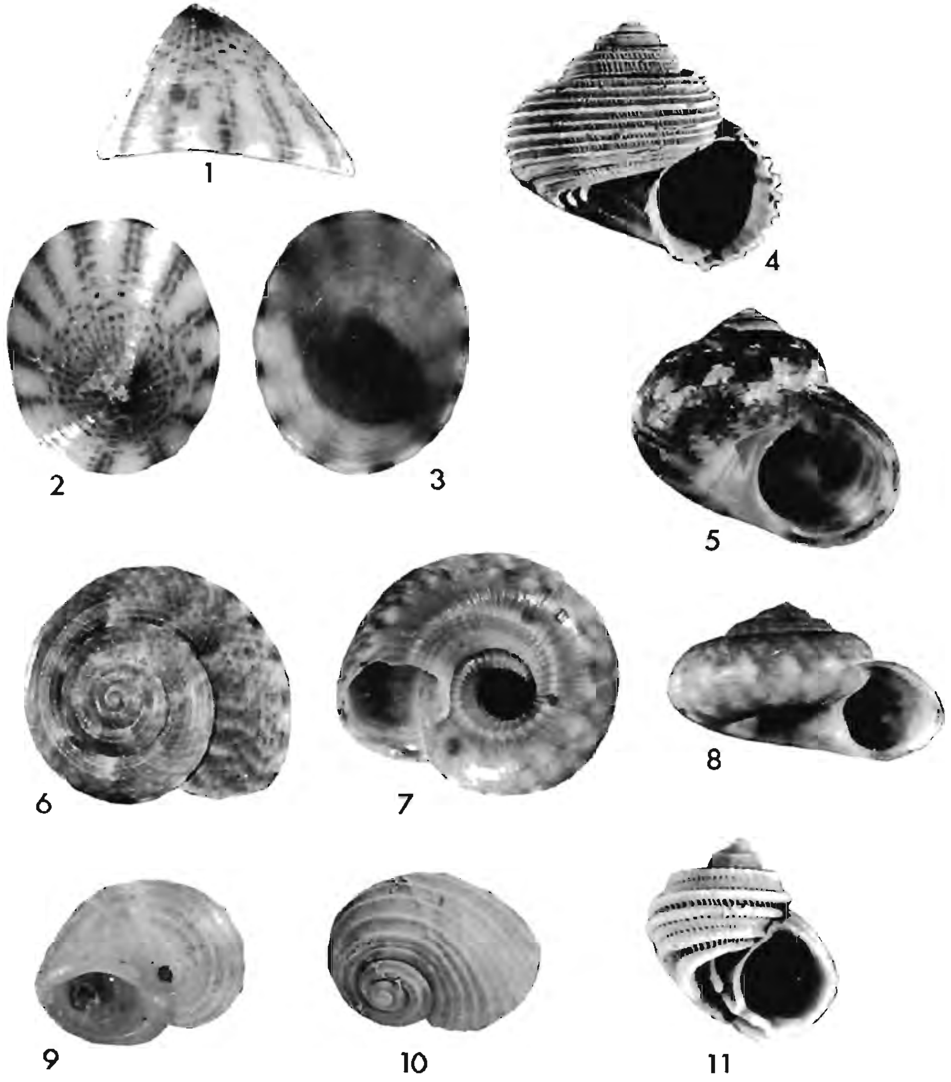
Description: Outline oval, conical, height 0,66–0,86 of length; apex blunt, not hooked, situated just anterior to midline; anterior face almost straight, posterior face gently convex, ventral margin concave so that base rests on its two extremities. Sculptured by fine, close growth lines only; surface somewhat silky; margin simple. Spatula not well marked, large, cephalic portion wide.

Umbo with a U-shaped brown mark, often enclosing a cream blotch; this is surrounded by golden-brown dots, radially arranged, often on a pinkish ground; with growth, these dots are arranged into 9–13 rays, consisting of golden-brown radial lines or dots on a whitish ground; interior silky white, external rays and umbonal mark sometimes showing through, occasionally as vivid pink or golden-brown rays. Dimensions: 3,2 × 3,0 × 2,3 mm (holotype); 6,3 × 5,6 × 4,8 mm, 2,9 × 3,2 × 2,5 mm (paratypes).

Distribution: TRANSKEI: Mzamba (Fossil Head), near the Mtamvuna River mouth.

Type material: Holotype N.M. A4585/T2051, leg. J. P. Marais. Paratypes 1–10 N.M. A5051/T2061, leg. J. P. Marais. Paratypes 11–15, in private coll. Marais. Paratype 16, N.M.

Remarks: In the absence of radula data the generic placement of this species must remain uncertain. It is referred to *Acmaea*, subgenus *Tectura* Gray, 1847, to facilitate comparison with *A.* (*T.*) *roseoradiata* E. A. Smith, 1901, the only similar species known from southern Africa. *A. roseoradiata* is a less capuliform species, with faint rays and no umbonal mark, and appears to be restricted to the western



Figs 1–11. 1–3, *Acmaea* (*Tectura*) *maraisi* sp. nov., holotype, 3,2 × 3,0 × 2,3 mm. 4, *Spectamen franciscana* (Barnard, 1963) juvenile, 7,1 × 7,7 mm. 5, *Gibbula* (*Calliotrochus*) *cummingae* sp. nov., holotype, 4,5 × 4,7 mm. 6–8, *Solariella durbanensis* sp. nov., holotype, 3 × 5,1 mm. 9–10, *Uzamakiella natalensis* sp. nov., holotype, 2,2 × 3 mm. 11, *Parviturboides habrotima* sp. nov., holotype, 2,3 × 2,2 mm. Specimens shown in figs 4, 10 and 11 were coated with magnesium oxide.

Cape (Table Bay and False Bay, with one record from off the Tsitsikama coast). According to Christiaens (1975) all other members of the subgenus *Tectura* are cold-water northern hemisphere species.

Two species of *Patelloida*, subgenus *Asteracmea*, from south-western Australia, are also comparable. *P.* (*A.*) *illibrata* (Verco, 1906) is rather similar in shape but has opaque white rays on a brownish-pink ground. *P.* (*A.*) *axiaerata* (Verco, 1912) is more depressed with more numerous rays of a golden-yellow colour.

The concave base of *Acmaea maraisi* suggests that it will be found living on the shells of other molluscs.

Named in honour of Mr J. P. Marais of Pietermaritzburg, who has collected this and many other interesting micromolluscs by sorting beach drift.

Family Trochidae

Genus *Turcica* A. Adams, 1854

Type species: (by original designation): *Turcica monilifera* A. Adams, 1854.

Turcica (*Perrinia*) *stellata* A. Adams, 1864

Turcica stellata A. Adams, 1864: 508; Pilsbry, 1889: 418, pl. 67, fig. 77; Yen, 1942: 177, pl. 11, fig. 11 (holotype); Melvill & Standen, 1901: 351; Biggs, 1973: 350. Type locality: China Seas.

Distribution: Persian Gulf (Melvill & Standen (1901) and Biggs (1973); Abu Dhabi (N.M.: Mrs K. Smythe)) and Gulf of Aden (Aden (N.M.: Burnup coll.)) to Mozambique. The occurrence of this species in south-east Asia does not appear to have been confirmed.

Regional locality records: SOUTHERN MOZAMBIQUE: ½ mile west of Santa Carolina Island, Bazaruto Archipelago, 3 fathoms on sand and shell-debris, dead (N.M.: Mr & Mrs P. Roscoe). NORTHERN MOZAMBIQUE: Mozambique Island (N.M.: R.K.). ZULULAND: Off Sordwana Bay, 50 m (N.M.: C.S.I.R.).

Remarks: The Mozambique Island specimen has rather weak spines and is narrower than specimens from Aden and Abu Dhabi, closely resembling Pilsbry's (loc. cit.) figure. The example from off Santa Carolina Island is intermediate.

Genus *Ethalia* H. & A. Adams, 1854

Type species (subsequent designation Pilsbry, 1889): *Rotella guamensis* Quoy & Gaimard, 1834.

Ethalia (*Ethaliella*) *striolata* (A. Adams, 1855)

Umbonium (*Ethalia*) *striolatum* A. Adams, 1855: 189. Type locality: Borneo.
Ethalia striolata; Pilsbry, 1889: 46 (synonymy), pl. 58, fig. 21; Orr Maes, 1967: 103, pl. 3J.

Distribution: Indonesian region and Cocos Keeling Island to Mozambique.

Regional locality data: SOUTHERN MOZAMBIQUE: ½ mile west of Santa Carolina Is., 3 fath. in sand and shell debris, living (N.M.: Mr & Mrs P. Roscoe); Benguera Island, dead (N.M.: E. Roscoe). NORTHERN MOZAMBIQUE: Nacala Bay (N.M.: K. Grosch).

Remarks: This species shows much the same range of coloration and pattern as *Umbonium vestiarum.*

Genus *Umbonium* Link, 1807

Type species (subsequent designation Pilsbry, 1889): *Trochus vestiarius* Linné, 1758.

Umbonium vestiarum (Linné, 1758)

Trochus vestiarius Linné, 1758: 758; Dodge, 1958: 190. Type locality: Mediterranean, Asiatic and Chinese Seas.
Umbonium vestiarum; Pilsbry, 1889: 450 (references & synonymy), pl. 58, figs 1–8; Sowerby, 1897: 19; Barnard, 1963: 284.

Remarks: Although recorded from Durban (Sowerby) and Kentani (Barnard) this species does not appear to occur in southern Africa. The Durban example from the

Burnup collection is extant in the Natal Museum, but unfortunately the name of the original collector was not recorded. No sign of this very characteristic species has subsequently been found in South Africa or Mozambique, nor does it appear to have been recorded from East Africa. In view of its vivid colours and habit of forming dense colonies it is hardly likely to have been overlooked.

Genus *Solariella* Wood, 1842

Type species (original designation): *Trochus maculatus* Wood, 1842

Solariella durbanensis sp. nov. (figs 6–8)

Diagnosis: Small (breadth 5 mm), low trochoid, umbilicus wide, whorls shouldered, sculpture of fine spiral lirae, walls of umbilicus cancellate, its margin crenulate; blotched with brown and cream, base with radial blotches of brown.

Description: Depressed trochoid, wider than high, body whorl rounded except for a moderately tabulate shoulder, spire whorls with periphery at their bases; sutures moderately deep, but not channelled, umbilicus deep and wide, with fairly angular margin; aperture rounded-quadrate, columella meeting paries at an obtuse angle, peristome continuous.

First teleoconch whorl without apparent sculpture, second whorl with three or four weak spiral threads, of which the first or second form the shoulder, which develops from the third whorl. Penultimate whorl with four or five thin, rather weak spiral lirae, whose intervals, which are wider than the lirae, may bear finer intermediaries, some of which may be present on the shoulder slope; base of body whorl with or without fine, barely elevated, spiral lirae; walls of umbilicus with 4–7 spiral threads, crossed by dense axial threads to form a cancellate sculpture, and which render the umbilical margin crenulate; whole surface with fine growth lines and microscopic prosocline lirules.

Colour variable, usually variegated with axial blotches and spirally arranged dots of different shades of brown and cream, base of body whorl paler with axial rays or spots of cream; umbilicus usually encircled by a brownish-white zone; occasionally uniform brownish-white with a white peripheral band, apex sometimes tinged with pinkish or brown.

Protoconch minute, of about 1½ whorls, diameter about 0,5 mm. Teleoconch whorls numbering about 5½.

Dimensions: 3,0 × 5,1 mm (holotype); 3,9 × 4,0 (paratype).

Distribution: NATAL: Durban Bay in shallow dredgings on sand.

Type material: Holotype N.M. A5040/T2045, leg./don. B. J. Young. Paratopotypes 1–100, N.M. A5041/T2046. Paratopotypes 101–103 in private coll. B. J. Young.

Remarks: This abundant species displays no striking characteristics, yet its characters, when taken in combination, conform with those of no known species. Spiral lirae are stronger than in the deep water Agulhas Bank *Solariella agulhasensis*, *S. multistriata* and *S. intermissa* of Thiele, 1925. The closest seems to be *S. whitechurchi* (Turton, 1932) from Port Alfred, described as a *Gibbula*; this, however, lacks the tabulate shoulder and has stronger spiral lirae on the base. *Minolia splendens* (Sowerby, 1897), which occurs abundantly in the same dredgings, has a lower spire, stronger and sharper spiral lirae, a smoother, more convex base, a more angular umbilical margin, with the spiral lirae on the umbilical wall feeble to obsolete, and it attains a larger size (diameter 8 mm or more).

The prosocline microlirules are visible only in the freshest specimens; no live examples are known.

Genus *Spectamen* Iredale, 1924

Type species (original designation): *Trochus philippensis* Watson, 1880.

Spectamen franciscana (Barnard, 1963) **comb. nov.**

Solariella franciscana Barnard, 1963: 243, figs 10e, 11b; Kensley, 1973: 42, fig. 100. Type locality: off Cape St Francis, 75 fathoms.

Remarks: Barnard noted the presence of an elongate intermediary radula plate (probably a modified lateral tooth, such as occurs in *Cantharidus suarezensis*—cf. Kilburn & Tankard, 1975: 188). A similar plate occurs in '*Minolia*' *philippensis* Watson, 1880, which is the type species of the genus *Spectamen*. This taxon is well distinguished from *Solariella* by its characteristic dentition.

S. franciscana was described from a single specimen. Eight specimens taken from the gut of a fish caught in the Cape St Blaize area (N.M.: R. le Maitre) are evidently immature examples of this species. The largest has 4½ teleoconch whorls and measures 7,6 × 8,5 mm.

Genus *Oxystele* Philippi, 1847

Type species (subsequent designation Herrmannsen, 1847): *Trochus merula* 'Chemnitz' = *T. sinensis* Gmelin, 1791.

Oxystele tigrina (Anton, 1839)

Trochus tigrinus Anton, 1839: 57 (based on Chemnitz, 1781: 53, pl. 165, fig. 1566); Philippi, 1847: 27, pl. 9, fig. 5. Type locality: unknown, but given as East Indies by Chemnitz, here emended to Table Bay.

Oxystele tigrina; Barnard, 1963: 267.

The authorship of this common South African species has previously been ascribed to the non-binomial author Chemnitz. The earliest validation appears to have been that of Anton, who utilized a binomial in combination with a reference to a recognizable figure.

Although *O. tigrina* has been recorded from Natal (Krauss 1848; Barnard 1963), it does not appear to range eastwards beyond Transkei, the easternmost locality known to the writer being Hole in the Wall, about 9 km south of Coffee Bay.

The specimens identified by Turton (1932: 182, pl. 44, no. 1280) as *Oxystele sagittifera* Lamarck var. *perdix* (Koch in Philippi, 1851) are certainly not referable to *O. tigrina*, as stated by Barnard, but are a high-spired form of *Oxystele variegata* (Anton, 1839). This has been collected by the writer among large wave-battered boulders east of the Port Elizabeth harbour, and among silted rocks on the banks of the Buffalo River estuary at East London. The 'blunt lirae' which Barnard noted in Turton's figure are actually colour bands. I cannot decide whether this form represents the true *Trochus perdix* of Philippi (1851: 150, pl. 24, fig. 17).

Genus *Gibbula* Risso, 1826

Type species (subsequent designation Herrmannsen, 1847): *Trochus magus* Linné, 1758.

Gibbula (Calliotrochus) cummingae sp. nov. (fig. 5)

Diagnosis: Turbiniform, slightly wider than long, semitranslucent, umbilicus deep but fairly narrow; early whorls with spiral striae, last whorl smooth; iridescent, marbled with red and white, with fine spiral hair-lines of red and white dots, early whorls and umbilical region yellow; length about 4,5 mm.

Description: Turbiniform, fairly thin-shelled and semitranslucent, slightly wider than long, aperture longer than spire; whorls evenly convex, periphery initially basal, but descending to just below middle on penultimate whorl; body whorl evenly rounded; aperture circular, columella evenly curved, peristome more or less continuous in adult state, parietal callus thin, transparent; labium rather thick, partially reflexed over umbilicus, which is fairly narrow but deep; umbilical margin rounded.

First teleoconch whorl with about 5 thin spiral lirae, increasing in number but becoming progressively flatter and more close-set, so that by the 2nd whorl they have developed into 6–9 spiral grooves, which become shallower and more widely spaced with growth, until by the last whorl there remain only faint spiral scratch lines; growth lines faint but distinct, particularly around umbilicus.

Surface iridescent, coloured with wavy axial blotches of red and whitish, breaking up into dots and zigzag lines on base; there are also thin spiral lines of articulated red and white dots and chevrons; labium, umbilical region and early whorls yellow.

Protoconch 1½–2 whorls, limits unclear, diameter approximately 0,2 mm. Teleoconch whorls 3½.

Dimensions: 4,5 × 4,7 mm (holotype), 3,3 × 3,6 mm (paratype 1), 4,2 × 4,5 mm (paratype 2).

Distribution: SOUTHERN MOZAMBIQUE: Bazaruto Archipelago.

Type material: Holotype N.M. G4094/T2098, Two Mile Reef, Benguera Island, *ex pisce*, leg. Mrs E. Roscoe. Paratype 1, N.M. G8295/T2075, West Bay, Santa Carolina Island, leg. Mrs N. Cumming; paratype 2, Bazaruto Island, in E, Roscoe coll.

Remarks: Closely allied to *Gibbula* (*Calliotrochus*) *ponsonbyi* (Preston, 1908) from the Andaman Islands and *G.* (*C.*) *marmorea* (Pease, 1861) from Hawaii (both described as a *Margarita*), but different in coloration, that species being patterned in green on a white ground. *G.* (*C.*) *phasianellus* (Deshayes, 1863) from Réunion Island, and *G.* (*C.*) *symbolica* (Iredale, 1937) from New Caledonia, are more conical and barely umbilicated. The unfigured *G.* (*C.*) *excellens* (Iredale 1937), from Lord Howe Island, is marked with green, has a very small umbilicus and more numerous spiral lirae on the spire. Specimens of *G.* (*C.*) *perconfusa* (Iredale, 1937) (= *Trochus striatulus* Garrett, 1857, *non* Deshayes, 1842) from Hawaii, if correctly determined, are also very close, but are covered with fine spiral striae.

G. perconfusa was cited as the type species of *Trochinella* Iredale, 1937, to which the present species could also be referred. Although this was accepted as a valid genus by Keen (1960: 25), the only features claimed as separating it from *Calliotrochus* are its thinner and more translucent shell, scarcely sufficient grounds even for subgeneric separation.

Gibbula ponsonbyi (Preston, 1908) is presumably a secondary junior homonym of *Trochus* (*Gibbula* ?) *ponsonbyi* Sowerby, 1888 [= *Monilea* (*Priotrochus*) *ponsonbyi*]. However, the classification of these small Trochidae is far from finalized, and erection of a substitute name is best deferred.

G. cummingae is named in honour of its discoverer, Mrs Nora Cumming.

Family Cyclostrematidae

Genus *Brookula* Iredale, 1912

Type species (original designation): *B. stibarochila* Iredale, 1912.

The following species must be transferred from the Epitoniidae. In shape and sculpture it is a typical *Brookula*.

Brookula gemmula (Turton, 1932) **comb. nov.**

Scalaria gemmula Turton, 1932: 84, pl. 19, fig. 601.
Scala gemmula; Barnard, 1963: 102; Kensley, 1973: 62, fig. 181.

Locality records: AGULHAS AREA: Still Bay (Barnard). EASTERN CAPE: Port Elizabeth (N.M.: F. Graeve); Port Alfred (type locality). NATAL: off Durban Bluff, 10 km 130° S.E. of Cooper Lighthouse, 210 m (N.M.: C.S.I.R., don. A. Connell). ZULULAND: off Sordwana Bay, 100 m, coral sand (N.M.: C.S.I.R., don. T. P. McClurg).

Remarks: Even allowing for the crudely retouched type figure, development of axial sculpture in this species appears to be very variable. More material is required.

Genus *Liotella* Iredale, 1914

Type species (subsequent designation): *Liotia polypleura* Hedley, 1904.

Although the following species has been referred to the Architectonicidae, its protoconch is not heterostrophic. Apart from the atypically strong spiral sculpture there is much resemblance to various Australian species of *Liotella* (e.g. *L. pulcherrima* (Henn & Brazier, 1894)). Sculpturally there is also some affinity to members of the genus *Pseudoliotia* Tate, 1898, but the non-prosocline labrum and widely perspective umbilicus of the present species appear to exclude it from that group.

Liotella cancellata (Krauss, 1848) **comb. nov.**

Solarium cancellatum Krauss, 1848: 95, pl. 5, fig. 29, Turton, 1932: 135; Barnard, 1963: 164.

Locality records: EASTERN CAPE: Algoa Bay (type locality); Port Alfred (Turton); Kwelera, near East London (N.M.: C. Connolly). TRANSKEI: Mbotyi, eastern Pondoland (N.M.: J. P. Marais). NATAL: Port Shepstone (N.M.: H. Burnup); Durban Bay, shallow dredgings (N.M.: B. J. Young); off Tugela River, 14 fathoms (Barnard).

Family Neritidae

Genus *Neritina* Lamarck, 1816

Type species (I.C.Z.N. Op. 119): *Nerita pulligera* Linné, 1766.

Neritina (*Neripteron*) *auriculata* Lamarck, 1816

Neritina auriculata Lamarck, 1816: pl. 455, figs 6a, b; *idem*, 1822: 186; Mermod, 1952: 144, fig. 162 (syntypes). Type locality: Australia.
Neritina (*Neripteron*) *auriculata;* Starmühlner, 1969: 56, figs 58–62 (synonymy, references, anatomy, ecology).
Nerita dubia Turton, 1932 (*non* Récluz, 1842): 202, pl. 53, no. 1402 (**syn. nov.**). Type locality: Port Alfred.
Nerita tomlini Turton, 1933: 371 (*nom. subst.*).

Distribution: Indonesia and New Caledonia to Mauritius, range here extended to South Africa.

Regional locality data: ZULULAND, Umlalazi Lagoon, Mtunzini area, in *Teredo* (s.l.) burrows in rotten branch (N.M.: P. Tempest). TRANSKEI: Mzamba, eastern

Pondoland, in beach drift (N.M.: R.K.). EASTERN CAPE: Port Alfred (Turton).
Remarks: The 1,3 mm juveniles described by Turton as *Nerita dubia* are certainly immature examples of the present species. A specimen in the collection of the Albany Museum, presented by Turton, has been examined. As Turton's examples ('at least a dozen') were collected in the Kowie Lagoon (Port Alfred), there is every probability that a breeding colony exists there.

Family Vitrinellidae

Genus *Parviturboides* Pilsbry & McGinty, 1950

Type species (original designation): *Cyclostrema sanibelensis* Pilsbry, 1945 = *Vitrinella interrupta* C. B. Adams, 1850.

The generic terms *Vitrinella* and *Cyclostrema* have been generally misapplied by South African writers to a wide range of unrelated species. Two of these, '*Vitrinella*' *agulhasensis* Thiele, 1925, from the Agulhas Bank, and '*Cyclostrema*' *alfredensis* Bartsch, 1915, from the eastern Cape littoral, agree in most shell characters with American species of *Parviturboides*. Although future knowledge of their radulae and opercula may well prove them to be unrelated, for the present they may conveniently be grouped here. The following undescribed species is tentatively included here, although it also shows similarity to members of the genus *Aorotrema* Schwengel & McGinty, 1942.

Parviturboides habrotima sp. nov. (fig. 11)

Diagnosis: Turbinate, width almost equal to length, whorls tabulately shouldered, two strong keels on spire whorls, three on base, one of which forms the border to the deep umbilicus; a spiral cord extends into umbilicus; intervals between keels with narrow rows of pits formed by short axial plicules; base of aperture with a slight notch; length 2,3 mm.
Description: Turbinate, width almost equal to length; whorls tabulately shouldered, sutures deep; aperture elliptical with a slight angle posteriorly, base with a shallow pseudo-siphonal canal; peristome continuous, labium with a thick, strongly concave callus, labrum smooth inside, heavily varicoid, usually with a previous varix retained dorsally on body whorl; umbilicus moderately wide and deep, with a strong spiral cord extending into it from base of labium, where it forms a weak tubercle. Sculpture of strong spiral cords, the upper one forming the tabulate shoulder; spire whorls with two cords, the lower being the stronger, and on later half of penultimate whorl a third, slightly weaker cord shows above the suture; base with a fourth, relatively weak cord terminating at parietal level, and a strong fifth forms the umbilical border. Spiral series of pits formed by short oblique plicules occur just below suture, immediately above second cord, and between it and the third, also above and below the fifth cord, and sometimes just above the fourth. White.

Protoconch vitreous, broadly conical, of about 2 whorls, limits not clear; teleoconch of about 2½ whorls.

Dimensions: 2,3 × 2,2 mm (holotype); 2,0 × 1,8 mm (paratype 1).
Distribution: NATAL: Durban Bay in shallow dredgings.
Type material: Holotype N.M. A5050/T2054, leg. B. J. Young, paratype 1, N.M. A5049/T2053, same data. Paratype 2, in coll. B. J. Young.

Remarks: Parviturboides habrotima closely resembles *P. agulhasensis* (Thiele, 1925) in form, but the latter has narrower, more numerous spiral cords and a non-tabulate shoulder. *P. alfredensis* (Bartsch, 1915) has a lower spire, thinner spiral cords, much more conspicuous axial plicules, and a non-tabulate shoulder. Of extralimital species '*Liotia*' *parvissima* Hedley, 1899, from Funafuti is evidently closely allied to *P. habrotima*, but is much smaller, with continuous axial threads and a thicker labrum.

Genus *Sigaretornus* Iredale, 1936.

Type species (original designation): *Adeorbis sigaretinus* Pilsbry, 1897.

Sigaretornus planus (A. Adams, 1850)

Cyclostrema plana A. Adams, 1850: 43. Type locality: Dumaguete, Negros Island, Philippines.
Adeorbis plana; A. Adams, 1863: 255, pl. 256, figs 3, 4.
Tornus planus; Habe, 1964: 34, pl. 10, fig. 33.
Sigaretornus planus; Kuroda *et al.*, 1971: 59, pl. 107, figs 1, 2.

Distribution: Japan and the Philippines, here extended to Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: Mozambique Island (N.M.: R.K.). SOUTHERN MOZAMBIQUE: Benguera Island, Bazaruto Archipelago (N.M.: Mrs E. Roscoe).

Genus *Uzamakiella* Habe, 1958

Uzamakiella Habe, 1958: 38. Type species (original designation): *U. japonica* Habe, 1958.

This genus, based on a single Japanese species, was described as similar to *Cavotera* Laseron, 1954, but with a posterior canal and a corneous operculum. '*Teinostoma*' *parvulum* Hedley, 1899, from Funafuti is probably referable here, although it possesses a distinctive tongue-shaped parietal callus which projects over the umbilicus.

Uzamakiella natalensis sp. nov. (figs 9–10)

Diagnosis: Whorls slightly stepped, spiral lirae thin with wider, concave intervals, lirae 3 on penultimate whorl, 16–17 on body whorl; white; width 3,2 mm.

Description: Depressed, width greatly exceeding height, thick-shelled, spire low, somewhat stepped, sutures fairly shallow; aperture orbicular, posteriorly forming a slight angle, peristome continuous, crossed at posterior angle by a shallow canaliculate furrow, parietal region with a thick callus, labrum strongly prosocline, so that aperture is tilted downwards at a slight angle; umbilicus fairly narrow, funnel-shaped, not distinctly margined. Sculptured by thin, low spiral lirae, 3 on penultimate whorl, 16–17 on body whorl, their intervals wide and concave, except behind lip where the lirae become weak; no axial sculpture. White. Protoconch domed, depressed somewhat vitreous, about 2 whorls, diameter 0,3 mm. Teleoconch whorls 2½.

Dimensions: 2,2 × 3,0 mm (holotype); 1,9 × 3,2 mm (paratype).

Distribution: NATAL: Durban Bay.

Type material: Holotype N.M. A5054/T2057; Durban Bay, shallow dredgings, leg. B. J. Young. Paratype 1. N.M. A5055/T2058, same data. Paratype 2, in coll. Young.

Remarks: The Japanese *Uzamakiella japonica* Habe, 1958, is very similar in shape, but has closer and more numerous spiral lirae, the type figure showing five threads on the penultimate whorl.

Family Orbitestellidae

Reference: Ponder (1967)

Genus *Orbitestella* Iredale, 1917

Type species (original designation): *Cyclostrema bastowi* Gatliff, 1966.

The delicately gemmulate *Homalogyra gemmulata* Turton, 1932, is sculpturally very similar to the type species of *Orbitestella* and must be removed from the smooth-shelled genus *Omalogyra* Jeffreys, 1860 (= *Homalogyra* Jeffreys, 1867).

Orbitestella gemmulata (W. H. Turton, 1932) **comb. nov.**

Homalogyra gemmulata Turton, 1932: 197, pl. 51, no. 1373; Barnard, 1963: 178; Kensley, 1973: 74, fig. 238.

Locality records: FALSE BAY: Millers Point, littoral (N.M.: C. Connolly). AGULHAS AREA: Still Bay, littoral (Barnard). EASTERN CAPE: Port Alfred, littoral (type locality). NATAL: off Durban Bluff, 10 km 130° S.E. of Cooper Lighthouse 210 m (N.M.: C.S.I.R. ex Dr A. Connell). ZULULAND: off Sordwana Bay, 100 m, coral sand (N.M.: C.S.I.R., ex T. P. McClurg).

Family Rissoidae

Genus *Rissopsis* Garrett, 1873

Type species (original designation): *Rissopsis typica* Garrett, 1873.

The following species differs significantly from members of the genus *Rissopsis* in its strongly reflexed labrum, distinctive pseudofasciolar ridge and free labial callus, but is referred to that taxon in preference to the creation of another monotypic rissoid genus. Its true position must await investigation by a future specialist.

Rissopsis tuba sp. nov. (fig. 12)

Diagnosis: Subcylindrical, apex blunt, whorls barely convex, aperture trigonal, deeply effuse anteriorly, labrum reflexed, labium straight, separated by a narrow groove from body whorl, base with a strong fasciole-like cord; smooth, glossy, translucent white; length about 5 mm.

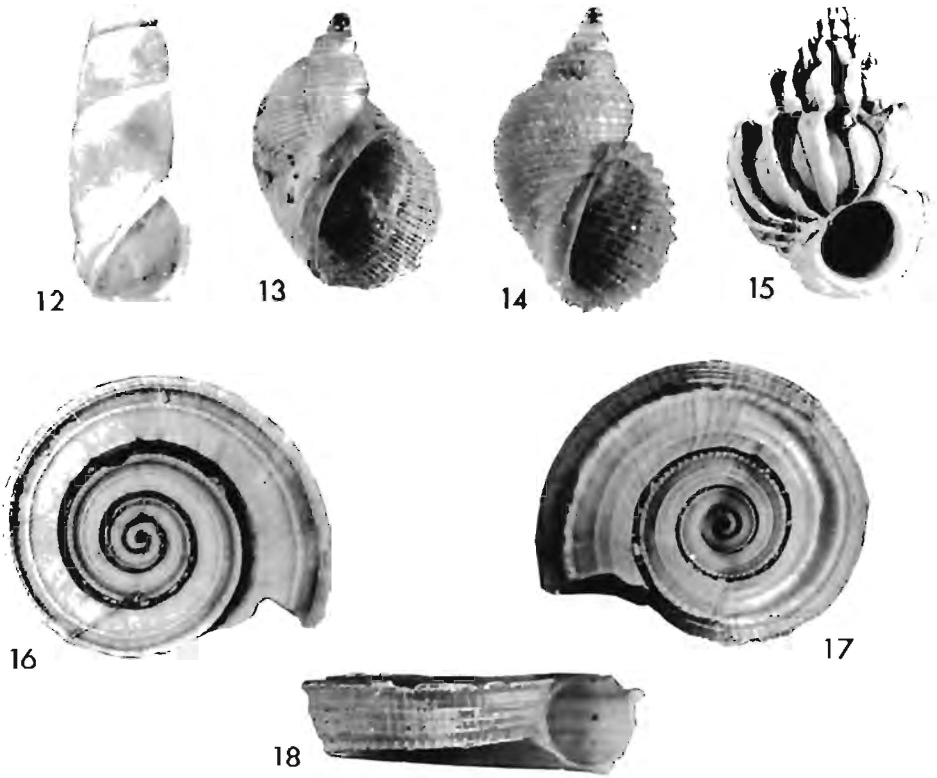
Description: Subcylindrical, apex blunt, whorls only slightly convex, increasing very gradually in size, sutures fairly deep; aperture trigonal, deeply effuse basally, labium straight, oblique, peristome continuous, labrum curved, reflexed, somewhat thickened, labial callus with raised edge, separated from body whorl by a narrow groove; base of body whorl with a strong fasciole-like cord; rest of surface smooth, except for growth lines. Translucent white. Protoconch planorboid, immersed, limit not clear. Total number of whorls about 5½.

Dimensions: 4,2 × 1,8 mm (holotype); 5,1 × 2,0 mm (paratype).

Distribution: NATAL: Durban Bay.

Type material: Holotype N.M. A5052/T2055, Durban Bay, shallow dredgings, leg. B. J. Young. Paratypes 1–6, N.M. A5053/T2056, same data; paratypes 7–9 in private coll. B. J. Young.

Remarks: Rissopsis tuba differs from *R. ligula* Kilburn, 1975, which occurs in the same dredgings, in its smaller size, reflected labium, free labium and basal cord. *Microdryas*(?) *densilabrum* (Melvill, 1912) from the Persian Gulf has a somewhat similar aperture and basal cord, but has strong spiral lirae and a less cylindrical form.



Figs 12–18. 12, *Rissopsis tuba* sp. nov., holotype, 4,2 × 1,8 mm. 13, *Couthoyia pasithea* sp. nov., holotype, 3,8 × 2,6 mm. 14, *Couthouyia mzambana* sp. nov., holotype, 4,3 × 2,7 mm. 15, *Epitonium pteroen* sp. nov., holotype, 9 × 5,8 mm. 16–18, *Heliacus* (*Mangonuia*) *smithae* sp. nov., holotype, 2,5 × 8,5 mm. Figs 15–18 show specimens coated with magnesium oxide.

Family Fossaridae

Genus *Couthouyia* A. Adams, 1860

Type species (original designation): *C. decussata* A. Adams, 1860.

This genus has not previously been recorded from South Africa.

Couthouyia incerta (Turton, 1932) **comb nov.**

Fossarus incertus Turton, 1932: 133, pl. 28, fig. 961. Type locality: Port Alfred.
Fossarus incertus similis Turton, 1932, 133, pl. 28, fig. 962. Type locality: Port Alfred.
Fossarus globulosus Turton, 1932: 133, pl. 28, fig. 963 (**syn. nov.**) Type locality: Port Alfred.
? *Vanikoro aenigmatica* Turton, 1932: 159, p. 36, fig. 1139. Type locality: Port Alfred.

The N.M. possesses only a single broken topotype. The species is well characterized by its smooth, white whorls and channelled sutures. As first revisor I select *Fossarus incertus* as senior synonym.

Couthouyia pasithea sp. nov. (fig. 13)

Diagnosis: Ovate, spire high, with mamillate apex, sutures deep, later part of last whorl disjunct, umbilicus deep; spirally lirate, axial striae minute, spirals feebly granular: white; length 3,8 mm.

Description: Ovate with high spire and large, oblique aperture, termination of last whorl somewhat scalarifom, labium separated from body whorl by a wide ledge and a deep umbilicus; sutures deep; aperture ovate, labium slightly flattened posteriorly.

First teleoconch whorl with 6 spiral threads, separated by narrow, shallow interstices, the second lira forming a slight shoulder; body whorl with a total of about 33 low lirae, which are somewhat stronger below the suture; these are rather tabulate and are more or less equal to their intervals in width; fine axial striations are just visible, rendering the spiral lirae very feebly granulose. White, slightly translucent.

Protoconch mamillate, smooth, of about 2 globular whorls, basal diameter 0,4 mm. Teleoconch whorls about 2½.

Dimensions: 3,8 × 2,6 mm.

Distribution: EASTERN CAPE PROVINCE: Port Elizabeth.

Type material: Holotype N.M. A4910/T2043, Humewood Beach, Port Elizabeth, leg. F. Graeve, from beach drift.

Remarks: Couthouyia pasithea rather resembles *C. thelacme* Melvill, 1904, from the Gulf of Oman, but has stronger spiral sculpture.

Couthouyia mzambana sp. nov. (fig. 14)

Diagnosis: Ovate, spire high, apex mamillate, whorls shouldered, sutures deep, last whorl only slightly scalariform, umbilicus deep, surrounded by a nodulose keel; sculpture initially of prosocline axials, later cancellate, with rounded nodules at intersection, those below suture somewhat sharp, interstices with spiral microstriae; pale brown; length 4,5 mm.

Description: Ovate, with high spire and large oblique aperture, termination of last whorl only slightly scalariform, labium separated from body whorl by a narrow fissure and deep umbilicus; whorls shouldered, sutures deep; aperture elliptical, labium much less curved than labrum. First teleoconch whorl with faint spiral striae and straight, prosocline axial ribs which bear weak nodules just below suture, forming a slight shoulder; spiral cords begin to develop on the third whorl, and on penultimate whorl, where they number 4–6, are subequal to the axial ribs; body whorl with 11 or 12 spiral lirae, much narrower than their intervals and stronger than the axial ribs, which number about 25; intersections forming shiny, rounded nodules, the series immediately below suture (and to a lesser extent the 2nd or shoulder series) sharper than the rest; interstices with spiral microstriae and growth lines; umbilicus bordered by a sharp nodular keel. Colour very pale, translucent brown.

Protoconch mamillate, smooth, vitreous, of about 3 whorls, basal diameter 0,3 mm. Teleoconch whorls 4½.

Dimensions: 4,3 × 2,7 mm (holotype), 4,5 × 2,8 mm, 3,3 × 2,1 mm (paratype).

Distribution: TRANSKEI: Mzamba, just south of the Mtamvuna River.

Type material: Holotype N.M. A5046/T2081, Mzamba, in beach drift, leg. J. P. Marais. Paratype 1, N.M. A5183/T2080, same data; paratype 2, in private coll. J. P. Marais.

Remarks: Couthouyia mzambana is very close to *C. aculeata* Hedley, 1900, from the Torres Straits, but has fewer spiral cords, and stronger, more oblique axial ribs on the spire, with weaker, more numerous ones on the body whorl.

Family Architectonicidae

Genus *Heliacus* Orbigny, 1842

Type species: *Solarium herberti* Deshayes, 1830 = *H. cylindrus* (Gmelin, 1791).

Heliacus (Mangonuia) smithae sp. nov. (figs 16–18)

Diagnosis: Lenticular, slightly concave above, very widely umbilicate, sides slopingly flattened, with sharp posterior keel and weaker basal one, separated by three thin lirae; sutures channelled; upper surface with an axially pliculate, convex median area, flanked to its inside by two fine lirae, to its outside by a thin cord, followed by a spirally lirate declivity which borders the peripheral keel; translucent; diameter 8,5 mm.

Description: Lenticular with slightly concave adapical face and deeply concave base, sides slopingly flattened with a posterior keel; sutures deeply channelled, whorls with upper face gently concave; aperture circular. Upper surface of whorls with two fine subsutural threads, the inner lying within sutural channel; a broad slightly convex median area bears feeble axial plicules only, and is bordered externally by a slightly undulating spiral cord; between that and the periphery is a spirally striate declivity, the periphery itself forming a projecting keel, whose adapical surface bears three undulating spiral lirae with faint axial plicules in the interstices. Sides of whorls with three thin, subequal spiral lirae; the intervals being feebly cancellated by axial and spiral striae; basal margin of sides with an anteriorly directed keel bearing three undulating lirae on its lateral surface, and one on its inner (basal) face. Basal face of whorls convex with two thin median lirae, rest of surface weakly cancellate. Translucent, rather vitreous, colourless.

Protoconch planorboid, milky white, termination tinged with orange, about 2½ whorls, diameter 0,9 mm. Teleoconch of about three whorls.

Dimensions: 2,5 × 8,5 mm.

Type material: Holotype N.M. A4911/T2044, Shelly Beach, just south of Port Shepstone, NATAL, leg. Mrs Doris Smith. Paratype in coll. J. P. Marais, Mzamba, TRANSKEI, a broken shell.

Remarks: Heliacus smithae resembles both *H. numulus* Barnard, 1963, and *H. obolos* Barnard, 1963, in shape; *H. numulus* has much stronger axial riblets, rendering the main keels nodular, and the suture is not canaliculate. *H. obolos* is more depressed, with simpler sculpture, the upper surface of each whorl bearing only a slight beaded ridge.

Named in honour of Mrs Doris Smith, discoverer of this species.

Family Epitoniidae

Genus *Epitonium* Röding, 1798

Type species (subsequent designation Suter, 1913): *Turbo scalaris* Linné, 1758.

Epitonium pteroen sp. nov. (fig. 15)

Diagnosis: Rather pyramidal, whorls not disjunct, axial ribs 10, oblique, continuous, strongly reflexed, with a strong, recurved, somewhat foliate shoulder spine; no spiral sculpture; base fenestrated, but not umbilicate; white; length 9 mm.

Description: Rather pyramidal, width 0,64 of length, whorls turreted, convex, not disjunct; aperture broadly ovate; peristome continuous, thickened in fasciolar region to form a slight expansion. Axial ribs 10 in number throughout, continuous and obliquely aligned across sutures, thickened and strongly reflexed, with a strong, recurved, somewhat leaf-like shoulder spine; backs of ribs with growth lines; no spiral sculpture. Base imperforate, but fenestrated (terminations of axial ribs separated by a series of deep pits); Colour white. Protoconch missing, teleoconch whorls $6\frac{1}{2}$.

Dimensions: 9,0 × 5,8 mm.

Distribution: SOUTHERN MOZAMBIQUE: Bazaruto Archipelago, Santa Carolina Island.

Type material: Holotype N.M. G7624/T2095; leg. Mrs E. Roscoe.

Remarks: E. pteroen is evidently closely allied to *E. savignyi* (Jousseame, 1912) from the Red Sea; that, however, was described as having disjunct whorls and only 7 axial ribs. *E. heloris* (Iredale, 1936) from New South Wales is somewhat similar, but is narrower, with deep sutures, more numerous ribs and interstitial spiral microstriae.

In view of the disagreement that exists as to the limits of *Epitonium*, no attempt is made to group *E. pteroen*. However, there is a remarkable morphological resemblance to members of the genus *Sthenorytis* Conrad, 1862, the Recent species of which are restricted to deep water off the Americas. They appear to differ solely in their larger size and more proscline labra.

Family Strombidae

Genus *Strombus* Linné, 1758

Type species (subsequent designation Montfort, 1810): *S. pugilis* Linné, 1758.

Strombus (*Canarium*) *wilsoni* Abbott, 1967

Strombus (*Canarium*) *wilsoni* Abbott, 1967: 455, pl. 328, figs 1–3; Cernohorsky, 1972: 76, pl. 20, figs 3, 3a.
Strombus dentatus (*non* Linnaeus); Tomlin, 1931: 428.

Distribution: Fiji and Western Australia to Zanzibar, here extended to Mozambique and Natal.

Additional locality records: NORTHERN MOZAMBIQUE: Conducia Bay, in fine muddy sand near rocks and *Thalassodendron*, L.S.T. to 1 ft above; Mozambique Bay, off Cabaceira Pequena, fine sand near rocks at L.S.T.; Lunga Bay, fine muddy sand near rocks and *Thalassodendron*, 3 ft above L.S.T. (N.M.: K. Grosch). NATAL: Durban (N.M.: H. Burnup); Shelly Beach, near Port Shepstone (N.M.: R.K. Mr & Mrs L. Cock), all beach shells.

Remarks: The Burnup specimen was collected nearly half a century ago, but was regarded by Tomlin as 'a rather extreme var.' of *Strombus dentatus.*

None of the present examples are as strongly shouldered as the Western Australian and Fijian specimens figured by Abbott and Cernohorsky (loc. cit.). It is interesting to note that the Shelly Beach examples are dwarfed (i.e. 13,5 × 6,6 mm), specimens of *Strombus mutabilis* Swainson, 1821, from this locality being similarly stunted.

Family Coralliophilidae

Genus *Coralliophila* H. & A. Adams, 1853

Type species (subsequent designation Iredale, 1912): *Murex neritoideus* ('Chemnitz') Gmelin, 1791 (*non* Linnaeus, 1767) = *Purpura violacea* Kiener, 1836.

Six species of *Coralliophila* have previously been reported from southern Africa. Three new records (*C. erosa*, *C. violacea* and *C. costularis*) and one new species are here added.

Coralliophila (*Coralliophila*) *erosa* (Röding, 1798)

Cantharus erosus Röding, 1798: 133 (based on Chemnitz, 1785: pl. 100, figs 954, 955). Type locality unknown.
Coralliophila erosa; Demond, 1957: 315.
Pyrula deformis Lamarck, 1822: 146. Type locality unknown.
Coralliophila deformis; Orr Maes, 1967: 133, pl. 2, fig. c, pl. 11, fig. a.

Distribution: Hawaii and Japan to Tanzania, range here extended to southern Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: Lunga Bay, Conducia Bay and Nacala Bay, on coral heads, 1–2 ft below L.S.T. (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Santa Carolina Island (N.M.: Mrs N. Cumming).

Coralliophila (*Coralliophila*) *violacea* (Kiener, 1836)

Murex neritoideus Gmelin, 1791 (*non* Linnaeus, 1767): 3559 (based on Chemnitz, 1788: 280, pl. 165, figs 1577–1578). Type locality: unknown.
Fusus neritoideus; Lamarck, 1816: pl. 435, figs 2a, b.
Pyrula neritoidea; Lamarck, 1822: 146.
Coralliophila (*Coralliophila*) *neritoides* (*sic*); Keen, 1971: 543, fig. 1061.
Purpura violacea Kiener, 1836: 77, pl. 19, fig. 57. Type locality: Nicobar, Dorey and Australia.
Coralliophila violacea; Demond, 1957: 315; Orr Maes, 1967: 133, pl. 2 fig. B.

Distribution: Galapagos Island area to the Red Sea, here extended to southern Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: Memba Bay, in hole in coral head on reef, 1 ft above L.S.T.; Conducia Bay, on coral head in tidal pool, L.S.T.; Lunga Bay, on top of coral head on fringing reef, 1 ft above L.S.T. (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Bazaruto Island (N.M.: Mrs E. Roscoe); Santa Carolina Island, off coral in about 60 ft (N.M.: Mrs N. Cumming).

Coralliophila (*Pseudomurex*) *costularis* (Lamarck, 1822)

Murex costularis Lamarck, 1816: 5, pl. 419, figs 8a, b; *idem*, 1822: 173. Type locality unknown.
Fusus costularis; Philippi, 1847: 193, pl. 4, fig. 17.
Coralliophila costularis; Adam & Leloup, 1938: 172 (references), pl. 7, fig. 10; Kira, 1962: 68, pl. 26, fig. 7.

Distribution: Japan to the Red Sea and Natal.

Regional locality data: NORTHERN MOZAMBIQUE: Conducia Bay, on coral boulder 2 ft below L.S.T. (N.M.: K. Grosch). NATAL: Scottburgh (N.M.: H. Burnup); Ramsgate (N.M.: B. Lafferty).

Remarks: Proportions vary considerably in this species. The Ramsgate specimen has an unusually low spire, which measures only about two thirds of the aperture in length. On the other hand, the spire of a shell from the Gulf of Aqaba measures approximately 1,5 times its aperture.

Coralliophila (*Pseudomurex*) *squamosissima* (E. A. Smith, 1876)

Rhizochilus (*Coralliophila*) *squamosissimus* E. A. Smith, 1876: 404; *idem*, pl. 51, fig. 8. Type locality: Rodriguez Island.
Coralliophila stearnsi Pilsbry, 1895: 45, pl. 2, fig. 12; Kuroda *et al.* 1971: 155 (references), pl. 43, fig. 14 (**syn. nov.**). Type locality: Japan.
Coralliophila (*Latimurex*) *meyendorffii* (? *non* Calcara); Kilburn, 1972: 412 (references), fig. 10c.

Distribution: Eastern Cape Province of South Africa to Tanzania, Rodriguez Island and Japan.

Additional locality data: NORTHERN MOZAMBIQUE: Lunga Bay (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Morungulu, near Massinga (N.M.: Mrs E. Roscoe). TRANSKEI: Mbotyi (N.M.: R.K.); Coffee Bay (N.M.: R.K.).

Remarks: Kilburn (1972) followed previous authors in regarding the South and East African population as inseparable from the Mediterranean *Coralliophila meyendorffii* (Calcara, 1845). A reappraisal of the available material suggests that the Indo-Pacific form may be separable, possibly as a subspecies, for which the name *C. squamosissima* is available. Typical *meyendorffii* is very distinct, with 7–9 coarse axial ribs and narrower proportions than *squamosissima*, which has 9–13 thin ribs and never develops the pink aperture sometimes found in Mediterranean shells. However *C. meyendorffii* is certainly a variable species, and plump specimens with 10–11 narrow ribs also occur (probably forma *sofiae* Aradas & Benoit, 1870). Two such specimens from Spain (N.M. coll.) can be matched almost exactly among Natal examples. Clearly the question must remain an open one, but in the interim the name *Coralliophila squamosissima*, the earliest applicable to the Indo-Pacific population, may be utilized.

Comparison with specimens of *Coralliophila stearnsi* Pilsbry from Japan and the Ryukyu Islands leaves no doubt that *squamosissima* and *stearnsi* are synonymous. Juveniles from the Philippines, doubtfully assigned to *C. squamosissima* by Schepman (1911: 362), may serve to bridge the gap between the eastern and western populations.

Coralliophila (*Pseudomurex*) *clathrata* (A. Adams, 1854)

Coralliophila (*Latimurex*) *clathrata*; Kilburn, 1972: 414 (references), fig. 10a, b. Type locality: Philippines.

Distribution: Natal to Mozambique and Philippines.

Additional regional locality records: NORTHERN MOZAMBIQUE: Conducia Bay (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Bazaruto Island, on underside of green soft coral (N.M.: Mrs E. Roscoe, N. Cumming).

Remarks: The subgenera *Pseudomurex* Monterosato, 1872 (type species *Murex bracteata* Brocchi, 1814) and *Latimurex* Coen, 1922 (type species *Murex meyendorffi* Calcara, 1845) differ only in very minor details and may be regarded as synonymous.

Coralliophila (*Rhombothais*) *rosacea* (E. A. Smith, 1903) **comb. nov.**

Latiaxis rosaceus Smith, 1903: 376, pl. 15, fig. 16; Barnard, 1959: 186. Type locality: Port Elizabeth.

Distribution: Still Bay to Port Alfred, and off Durnford Point (Zululand) in 13 fathoms (Barnard).

Additional locality data: EASTERN CAPE: Jeffreys Bay and East London (N.M. coll.). TRANSKEI: Mbotyi, eastern Pondoland (N.M.: R.K., J. McKay).

Remarks: '*Latiaxis*' *rosaceus* bears little resemblance to members of that genus, but in its squat, biconical form, nodular sculpture and slight umbilicus closely approaches *C. arbutum* (Woolacott, 1954), the type species of *Rhombothais* Woolacott, 1954.

Coralliophila (Liniaxis) groschi sp. nov. (figs 19–20)

Diagnosis: Fusiformly biconical, whorls with an angular periphery, last whorl partly disjunct, labium separated by a deep furrow, umbilicus narrow and deep; axial ribs crossed by narrow, squamulose spiral lirae; white, length about 24 mm.

Description: Fusiformly biconical, spire high conical, whorls with a sharp peripheral angle at or just above midline, sutures deep, termination of body whorl slightly disjunct, labium erect, separated from body whorl by a deep furrow, umbilicus deep, narrow; aperture pyriform, rounded posteriorly, angular at base. Sculptured by spiral lirae, subequal in strength, except for the peripheral thread which is stronger, and on the body whorl where the supraperipheral lirae are somewhat weaker than those below the periphery, where they tend to be alternately weaker and stronger; second teleoconch whorl with 7 spiral lirae, increasing to 11–12 on the penultimate whorl and to a total of 30 on body whorl; lirae narrower than their intervals, except on the base where they are wider than them and squamose; axial ribs about 10 on second whorl, increasing to 12 on penultimate whorl, but becoming obsolete on last whorl, rounded, subequal to their intervals, rendering peripheral keel undulate. White. Apical whorls eroded, probably 4½ teleoconch whorls.

Dimensions: 23,9 × 15,7 mm.

Distribution: Known only from the type locality, east of Posto Lunga, Lunga Bay, NORTHERN MOZAMBIQUE, dredged dead on fine coral sand and *Thalassodendron* in 25 feet.

Type material: Holotype N.M. H382/T2047, leg. K. Grosch, June 1966.

Remarks: Coralliophila groschi is very closely allied to *C. solutistoma* Kuroda & Shikama, 1966, from off Japan, but differs in its angular periphery, pure white colour and more solute aperture. Of southern African species, *Coralliophila (Liniaxis) fritschi* (Von Martens, 1874) may on occasion develop a similarly disjunct aperture, but differs in its rounded whorls and stronger axial ribs.

Named in honour of its discoverer, Mr K. J. Grosch of Mossuril.

Genus *Quoyula* Iredale, 1912

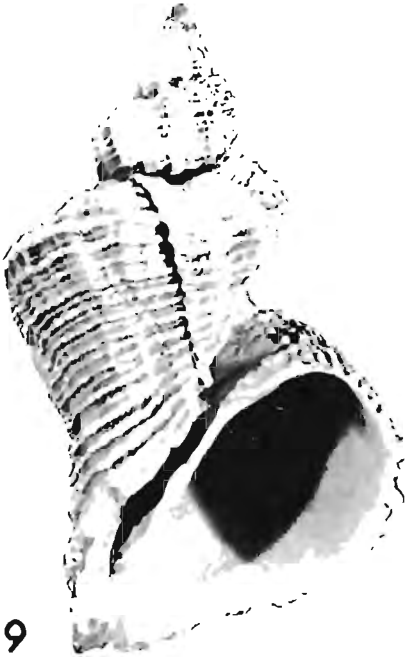
Type species (original designation): *Purpura monodonta* Blainville, 1832.

Quoyula monodonta (Blainville, 1832)

Purpura monodonta Blainville, 1832: 241; Kiener, 1835–36: pl. 17, figs 50, 50a; Deshayes, 1844: 89. Type locality: Tongatabu.
Quoyula monodonta; Demond, 1957: 316; Keen, 1971: 548, fig. 1072.
Coralliobia madreporarum (? *non* Sowerby); Barnard, 1959: 193.

Distribution: NORTHERN MOZAMBIQUE: Conducia Bay, on coral head, L.S.T. to 1 ft below (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Bazaruto Island (N.M.: R. Cruickshank, Mrs E. Roscoe); Delagoa Bay (Barnard). NATAL: Shelly Beach, near Port Shepstone, beachworn (N.M.: Mrs R. Cock). TRANSKEI: Port Grosvenor, eastern Pondoland, very beachworn (N.M.: R.K.).

Remarks: Demond (1957) regards *Q. madreporarum* (Sowerby, 1834) as a distinct species, separated by its coarser, scaly spiral ridges and the invariable absence of a basal columella denticle. Keen (1971), however, queries the validity of this separation.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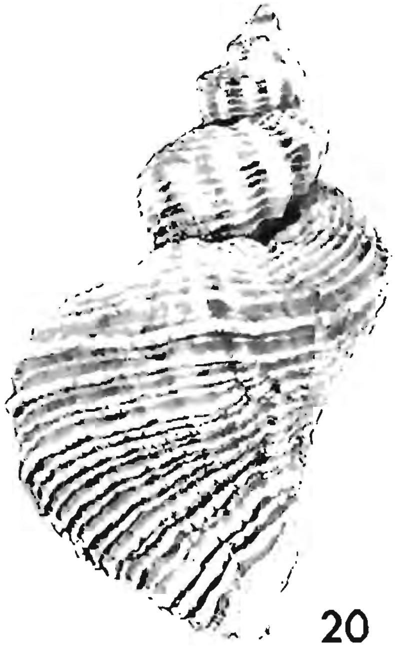
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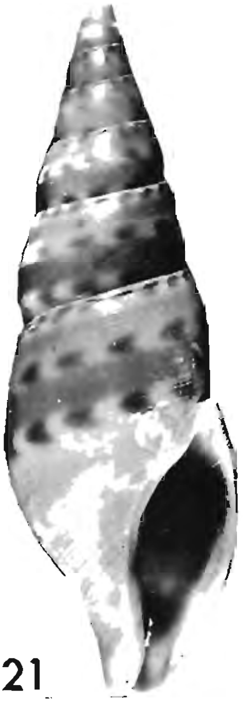
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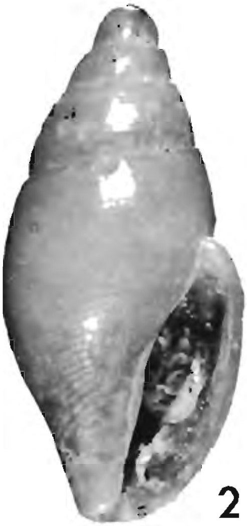

22

Figs 19–22. 19–20, *Coralliophila (Liniaxis) groschi* sp. nov., holotype. 23,9 × 15,7 mm. 21, *Kanamarua rehderi* sp. nov., holotype 45,0 × 14,7 mm. 22, *Mitrella graevei* sp. nov., 10,2 × 4,7 mm. Figs 19 and 20 show a specimen coated with magnesium oxide.

All the present material shows some degree of denticle development and fine sculpture (where this is visible). I therefore utilize the earlier name.

Genus *Rapa* Bruguiere, 1792

Type species (subsequent designation Herrmannsen, 1848): *Bulla rapa* Linné, 1758.

Rapa rapa (Linné, 1758)

Murex rapa Linné, 1758: 752. Type locality: Asiatic Seas.
Bulla rapa; Linné, 1767: 1184; Dodge, 1955: 32.
Rapa rapa; Adam & Leloup, 1938: 171 (references and synonymy); Kira, 1962: 67, pl. 25, fig. 17; Orr Maes, 1967: 133, pl. 2, fig. A.

Distribution: China and Indonesia to Mozambique and Zululand.

Regional locality data: NORTHERN MOZAMBIQUE: Conducia Bay, in soft coral at L.S.T., and washed up after cyclone (N.M.: K. Grosch). ZULULAND: Sordwana Bay, juvenile (N.M.: C. Johnson).

Genus *Magilus* Montfort, 1810

Type species (original designation): *Magilus antiquus* Montfort, 1810.

Magilus antiquus Montfort, 1810

Magilus antiquus Montfort, 1810: 43; Baker, 1891: 38 (synonymy), pl. 9, figs 1–3; Sowerby, 1918: 75 (synonymy); Demond, 1957: 316, text fig.; Kira 1962: 67, pl. 25, fig. 9.

Distribution: Hawaii, Japan to Red Sea and southern Mozambique.

Regional locality records: SOUTHERN MOZAMBIQUE, Morungulu, near Massinga, N. of Inhambane (N.M.: Mrs E. Roscoe).

Family Columbellidae

Genus *Mitrella* Risso, 1826

Type species (subsequent designation Cox, 1927): *Mitrella flaminea* Risso, 1826 = *Murex scriptus* Linné, 1758

Mitrella graevei sp. nov. (fig. 22)

Diagnosis: Ovate-fusiform, sutures deep, labrum flattened, smooth; sculptured by flat, close spiral lirae; uniform pinkish-orange, rostrum paler, with wavy axial brown flames. Length 10 mm.

Description: Ovate-fusiform, aperture subequal to or slightly longer than spire, whorls gently convex, sutures narrow but rather deep; labrum smooth inside, flattened with a slight posterior shoulder, aperture anteriorly rather linear, tapering posterior to midline, labium with a thin, smooth callus deposit. Sculptured by close, flattened spiral lirae, about 7 on first whorl, body whorl with about 28–33, the basal ones being markedly more elevated than the others, while the subsutural lirae are particularly flattened, their positions being revealed chiefly by the presence of interstitial grooves.

Protoconch rather papillose, of 2 smooth whorls, limits well defined, diameter 1,4 mm. Teleoconch whorls about 3½.

Colour uniform pinkish-orange, except for the rostrum, which is paler and bears wavy axial brown stripes.

Dimensions: 10,2 × 4,7 mm, aperture 5,8 (holotype); 10,3 × 4,9 mm, aperture 5,7 mm (paratype).

Distribution: EASTERN CAPE PROVINCE: Port Elizabeth area.
Type material: Holotype N.M. A2639/T2103; paratype 1, N.M. A2637/T2082; paratypes 2–5, N.M. A2634/T2083, all leg. F. Graeve; Sea Reserve, near Sardinia Bay, Port Elizabeth.
Remarks: This characteristic species is unfortunately known only from more or less beach-rolled specimens. It shows some resemblance to *Mitrella spreta* (Thiele, 1925) from Angola, but is larger, more fusiform and strikingly coloured. *M. brunnescens* (Thiele, 1925) from off the eastern Cape is also comparable, but differs in colour and size and in its higher spire. *M. salmoneus* (Barnard, 1963) from south of Malagasy Republic is evidently comparable in colour and sculpture, but judging by the figure given by Kensley (1973: 151) has a much higher spire and wider aperture; the protoconch is smaller. The only littoral South African species with which *M. graevei* can be confused is the pink form of *Mitrella floccata* (Reeve, 1859) which occurs in the Transkei/Natal area. This differs in the spiral sculpture being restricted to the base, in its higher, sharper spire and in the normal presence of white subsutural flecks and labral denticles.

Named in honour of the discoverer, Mr F. Graeve of Port Elizabeth.

Family Buccinidae

Genus *Kanamarua* Kuroda, 1951

Type species (original designation): *Colus (Aulacofusus) adonis* Dall, 1919.

Kanamarua rehderi sp. nov. (fig. 21)

Diagnosis: Narrowly fusiform, spire longer than aperture, relatively solid, sculpture of fine spiral lirae cut into minute, flattened granules, with a fine, but distinct, subsutural cord; marked by a brown spiral band flanked by rows of brown spots on a paler ground; length 5 cm.
Description: Narrowly fusiform, spire longer than aperture, moderately thick-shelled, whorls gently convex, last whorl tapering towards base; aperture narrowly elliptical, greatest width at middle, acutely tapering at each end; labrum with a varicoid thickening, inner margin sometimes feebly plicate; labium with a moderately thick callus, with a slight indication of a parietal nodule. Sculptured by fine spiral lirae cut by subequal axial threads into feeble, flattened granules; one thread situated immediately below the suture is stronger than the others and separated from them by a shallow but relatively wide furrow; each whorl with one, sometimes two varices, visible more on account of their pale colour than their relief.

Each whorl with a median brown band, flanked on each side by a series of brown spots on a paler ground; base of body whorl with a third series of spots; varices pale, with well-developed transverse brown markings.

Protoconch conical, of about 4½ smooth convex whorls, basal diameter 1,6 mm, teleoconch whorls 8½. Operculum and radula unknown.

Dimensions: 45,0 × 14,7 mm (holotype); 50,2 × 17,0 mm (paratype 1).
Distribution: Zululand and southern Mozambique, down to about 260 fathoms.
Type material: Holotype N.M. G7844/T2026, *ex pisce*, between Inhaca Island and Ponto Zavora, SOUTHERN MOZAMBIQUE, leg. C. P. Fernandes; paratype 1,

N.M. 9575/T2027, off Durnford Point, ZULULAND, in about 260 fathoms, don. A. Visagé; paratype 2, between Inhaca and Inhambane *ex pisce*, in coll. Mrs H. Boswell.

Remarks: The Japanese *Kanamarua adonis* (Dall, 1919), of which specimens from 50–80 fathoms off Mikawa are available, is much thinner-shelled and more fusiform, the aperture being subequal in length to the spire; it also lacks a definite colour pattern and there is no fine subsutural thread such as occurs in *K. rehderi.*

Named in honour of Dr Harald Rehder of the United States National Museum, who first drew my attention to its affinities.

Genus *Nivitriton* Iredale, 1929

Type species (original designation): *Triton antiquatus* Hinds, 1844.

'*Colubraria*' *fictilis* (Hinds, 1844) and '*C.*' *crebrilirata* (Sowerby, 1903) are very similar in shell form to the type species of *Nivitriton*, and differ considerably in proportions to members of the genus *Colubraria.*

Nivitriton fictilis (Hinds, 1844) **comb. nov.**

Triton fictilis Hinds, 1844: 21; *idem*, 1844*a*: 12, pl. 4, figs 11, 12; Reeve, 1844: pl. 20, sp. 98. Type locality: Agulhas Bank, 50–60 fathoms.
Colubraria fictilis; Barnard, 1963: 35; Kensley, 1973: 134; fig. 450.
Epidromus crebrilirata Sowerby, 1903: 220, pl. 4, fig. 4 (**syn. nov.**). Type locality: off Glendower Beacon, near Port Alfred, 100 fathoms.
Colubraria crebrilirata; Barnard, 1963: 36; Kensley, 1973: 134, fig. 449.

Remarks: Barnard separated *crebrilirata* from *fictilis* on grounds of its fewer axial ribs (13 on the last whorl instead of 24–26). A N.M. series taken *ex pisce* in the Cape St Blaize area contains specimens with rib counts ranging from 16 to 26, clearly linking up the two extremes.

Family Marginellidae

Genus *Marginella* Lamarck, 1799

Type species (monotypy): *Voluta glabella* Linné, 1758.

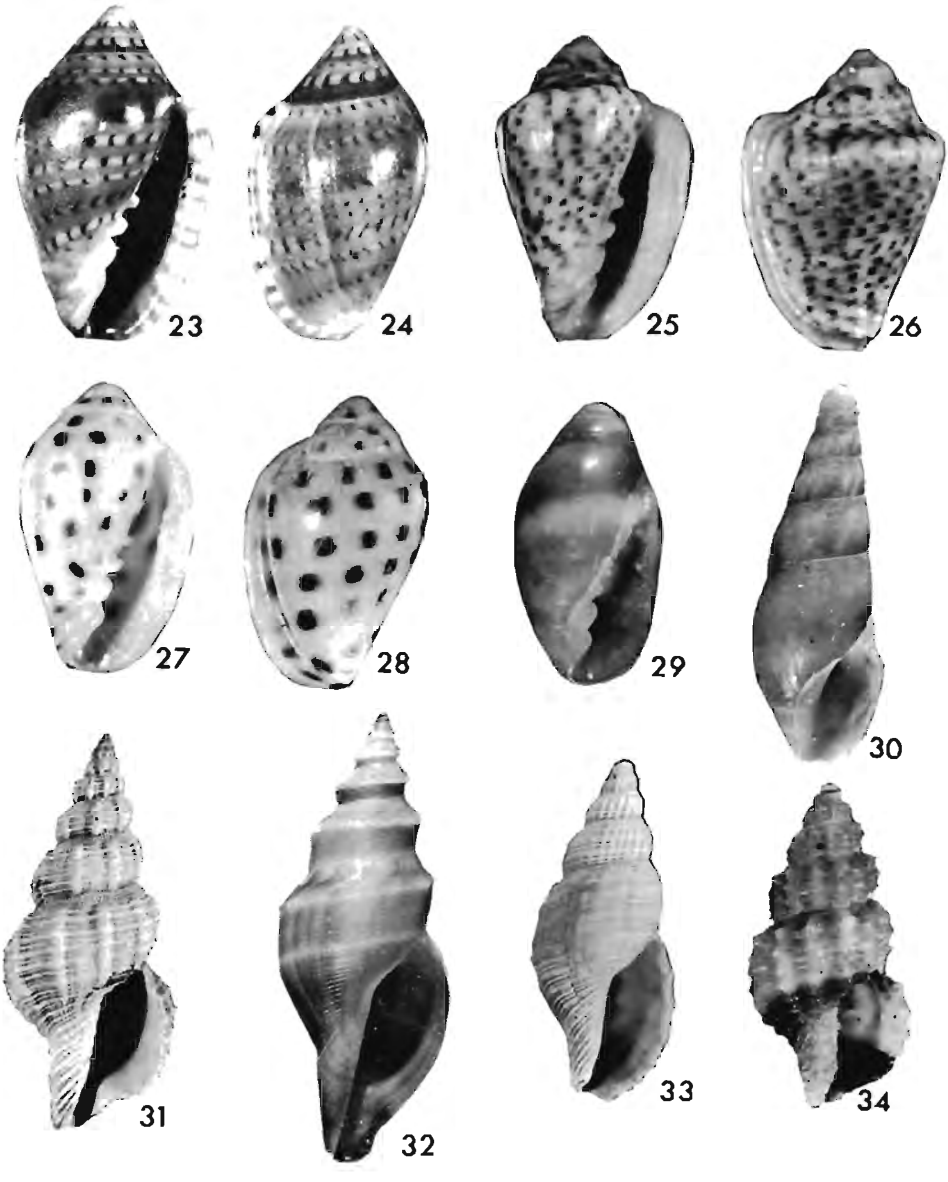
Marginella (Marginella) nevillana sp. nov. (figs 27–28)

Diagnosis: Biconical, shoulder rounded, smooth, spire whorls gently convex; labrum denticulate, with a shallow sinus posteriorly, columella pleats four, siphonal notch absent; colour greyish-white with spiral series of black spots (8 on body whorl); length 7,6 mm.

Description: Biconical, with relatively low spire, shoulder rounded, smooth, spire whorls gently convex; labrum thick, its inner edge denticulate, except posteriorly where there is a shallow, smooth sinus; columella pleats strong, four, labium not calloused; aperture narrow, widest point towards anterior end, siphonal canal not basally notched.

Protoconch domed, two whorls, basal diameter about 1,1 mm. Teleoconch whorls 2½ in number.

Colour greyish-white with spirally arranged rows of black spots, eight rows on body whorl, one showing around middle of spire whorls, these rows terminating as a series of spots along trailing edge of labrum, which is otherwise uniform white; protoconch white.



Figs 23–34. 23–24, *Marginella stuarti* sp. nov., holotype, 12,8 × 7,4 mm. 25–26, *M. youngi* sp. nov., holotype, 10,2 × 6,7 mm. 27–28, *M. nevillana* sp. nov. holotype, 7,6 × 4,5 mm. 29, *Volvarinella procrita* sp. nov., holotype, 5,4 × 2,8 mm. 30, *Paracuneus cockae* sp. nov., holotype, 9,6 × 3,3 mm. 31, *Tritonoturris obesa* sp. nov., holotype, 25,9 × 11,4 mm. 32, *Isodaphne albolineata* sp. nov., holotype, 17,7 × 7,1 mm. 33, *Eucyclotoma trivaricosa* (Von Martens, 1880), Durban, 12,2 × 5,4 mm. 34, *Tritonoturris phaula* sp. nov., holotype, 7,7 × 3,7 mm. Specimens shown in figs 31 and 33 have been coated with magnesium oxide.

Dimensions: 7,6 × 4,5 mm (holotype).

Distribution: EASTERN CAPE PROVINCE: between Port Elizabeth and East London, *ex pisce*.

Type material: N.M. A4909/T2040, don. S. B. D. Nevill.

Remarks: Marginella nevillana shows scant resemblance to any described species. Of local forms it approaches *M. mosaica* Sowerby, 1846, and *M. bicatenata* Sowerby, 1914, in the presence of black spots, but differs from both in its small size and denticulate labrum, as well as in details of colour pattern.

Named in honour of Mr S. B. D. Nevill of Durban, who placed this specimen at my disposal.

Marginella (Marginella) stuarti sp. nov. (figs 23–24)

Diagnosis: A small, rather squat *Marginella* s.s., length about 12 mm, labrum weakly denticulate; colour pale olivaceous-grey, with pale spiral bands bearing dark grey marks, labrum crossed by purplish-, greyish- or pinkish-brown bands; length about 12 mm.

Description: Ovate-biconical, base broadly truncate, without a siphonal notch; spire orthoconic, about 0,2–0,3 of total length, spire whorls very gently convex; body whorl not shouldered, periphery situated at about one quarter of its length below suture. Aperture more or less linear, except posteriorly, where it narrows; columella with 4 strong pleats, the anterior pair strongly oblique, the posterior two more transverse; parietal region not calloused; labrum moderately thick, posterior angle notched, edge with a series of weak and sometimes irregular denticles.

Protonoch bluntly domed, about 1,5 whorls, basal diameter 1,1 mm; teleoconch whorls 3,5.

Ground colour olivaceous-grey, usually suffused around periphery, and, to a lesser extent, above base, with darker grey; marked by pale spiral bands bearing oblique bars or chevrons of dark grey; these bands vary in width, although one band just below periphery is always more conspicuous than the others; first teleoconch whorl with widely spaced radial grey flames, the spiral bands beginning on the second whorl; these number one or two on the second whorl, two or three on the third and about twelve on the body whorl; the markings become rather muted on the base. Labral varix yellowish-white, crossed transversely by about 12 purplish-, pinkish- or greyish-brown bands; interior of siphonal canal, and often the whole aperture, suffused with that colour. Apex rather vitreous, faintly tinted with orange, first suture showing a brown margin.

Dimensions: 12,8 × 7,4 mm (holotype); 12,1 × 7,1 mm, 11,5 × 6,7 mm (paratypes).

Mantle and sides of foot blotched with grey, sole yellowish. Radula evidently absent.

Distribution: Known only from the Walvis Bay to Swakopmund area, SOUTH WEST AFRICA, living on sandy silt under weed-covered rocks in very shallow water in sheltered bays.

Type material: Holotype N.M. A5181/T2078, between Walvis Bay and Swakopmund, leg. C. T. Stuart, 1976: paratypes 1–7, N.M. A5182/T2079, same data; paratypes 8–12, N.M. A5409/T2121, Walvis Bay, leg. C. T. Stuart, 1975.

Remarks: This species is very constant in its characters; while closely allied to *Marginella rosea* Lamarck, 1822, from the south-western Cape (range Cape Hangklip to Paternoster), that is a larger, more elongated species (length 17,8–29 mm), with more oblique columella pleats and a different range of colour patterns. Furthermore, *M. rosea* always shows a shallow sinus in the peripheral region of the labrum, and the latter never bears transverse bands, these being represented by a series of short bars which are restricted to the trailing face of the varix. Of West African species *M. stuarti* shows some resemblance to *M. belcheri* Hinds, 1844, from Mauritania; that, however, is more biconical, and the labrum is smooth and immaculate.

Named in honour of Mr C. T. Stuart, discoverer of the species.

Marginella (Glabella) youngi sp. nov. (figs 25–26)

Diagnosis: Broadly biconical, shoulder strong, with feeble, irregular coronations, spire stepped; labrum very thick, denticulate; columella pleats four, siphonal notch absent; greyish-white with dark-grey undulating flames broken into spiral series of spots; length about 8 mm.

Description: Broadly biconical, whorls strongly shouldered so that spire presents a stepped appearance, shoulder crossed by irregular growth lines creating weak, uneven nodules at intervals; labrum very thick, inner edge weakly denticulate; columella with four strong pleats, paries without a callus deposit; aperture narrow, rather linear, siphonal canal not notched.

Protoconch domed, of about two rather vitreous whorls, diameter about 1,2 mm. Teleoconch whorls about 2½ in number.

Greyish-white with undulating dark flames which are broken up into spiral series of spots and chevrons; labrum white, sometimes with a few faint irregular grey spots.

Dimensions: 10,2 × 6,7 mm (holotype), 7,8 × 5,2 mm (paratype).

Distribution: CENTRAL MOZAMBIQUE: trawled off Chinde, in shallow water on a muddy bottom.

Type material: Holotype N.M. G7889/T2030, paratypes 1–3, N.M. G7890/T2031; paratypes 4–8, in coll. B. J. Young; paratype 9, in coll. P. Clover.

Remarks: In shape and coloration *Marginella youngi* is somewhat similar to *Marginella bairstowi* Sowerby, 1886, from the eastern Cape, and its western Cape form/subspecies *epipolia* Tomlin, 1921. The small size of *M. youngi*, its thick, denticulate labrum, stepped spire and somewhat coronate shoulder readily separate it from these two. Of western Indian Ocean species it may be compared to *M. obtusa* Sowerby, 1846, from the Gulf of Aden and *M. ansonae* (Clover, 1974) from Réunion Island. Both of these have definite axial ribs rather than feeble coronations, and the labrum is distinctly spotted; *M. obtusa* is much larger than *M. youngi*, and *M. ansonae*, while approaching the latter in size, is irregularly marked with brown.

Genus *Volvarinella* Habe, 1951

Type species (original designation): *Volvarinella makiyamai* Habe, 1951

In addition to the following new species, *Volvarinella* (which will probably prove a synonym of the earlier *Dentimargo* Cossman, 1899) is evidently represented in South Africa by *V. neglecta* (Sowerby, 1846), *V. brocktoni* (Shackleford, 1914), *V. clara* (Thiele, 1925), *V. augusta* (Thiele, 1925) and possibly '*Marginella*' *adela* (Thiele, 1925).

Volvarinella procrita sp. nov.

Diagnosis: Oblong-ovate, with very blunt, conical spire, left side of body whorl distinctly more convex than right, labrum smooth, columella concave, with 4 pleats, parietal callus showing above suture; translucent dark pink with a pale median band; length 5 mm.

Description: Oblong-ovate, body whorl strongly convex on left side with the periphery median, but labrum almost straight, producing a very asymmetrical outline; spire low conical, less than 0,3 of total length, with a very bluntly domed apex. Aperture cuneiform, acute posteriorly; siphonal canal not indented basally; labrum moderately thickened, smooth inside; columella concave, with four strong pleats of which the anterior two are strongly oblique, and the posterior two are more transverse; paries almost straight; whole labium covered by a thin callus, extending above suture to show on spire whorls as a narrow band. Surface smooth, apart from occasional growth lines. Protoconch worn, but apparently of one depressed whorl of diameter 0,5 mm; teleoconch whorls 3.

Colour dark pink, body whorl with a median pale band and a darker pink band just posterior to this; columella white.

Dimensions: 5,4 × 2,8 mm.

Distribution: TRANSKEI: Mzamba, eastern Pondoland.

Type material: Holotype N.M. 4417/T2062, leg. R.K.

Remarks: Volvarinella procrita is very closely related to *V. deformis* (G. & H. Nevill, 1874) from Ceylon, a species with similarly asymmetrical body whorl, bluntly conical spire, concave columella and apertural features. *V. deformis*, however, is more obese in shape and bears chestnut bands on a white ground.

Family Turridae

Genus *Paracuneus* Laseron, 1954

Type species (original designation): *Mangelia immaculata* Tenison-Woods, 1876.

This genus was established for a small group of Australian Turridae, but can evidently be utilized for certain South African species as well. Radula structure is unknown in this group, but the shell appears to differ from that of *Drillia* Gray, 1838, in the greatly suppressed sculpture, somewhat more bulbous protoconch and absence of a false umbilicus.

South African species referable here are *Pleurotoma platystoma* E. A. Smith, 1877 (only in part *sensu* Barnard, 1958) and the unnamed species recorded by Barnard as 'cf. *Pleurotoma* ? *paula* Thiele'; the latter has little affinity to the true *paula* Thiele, 1925, which, according to N.M. examples, has deep, sinuous axial grooves. A third species is here added.

Paracuneus cockae sp. nov. (fig. 30)

Diagnosis: Slender, spire nearly twice length of aperture, whorls moderately convex, base truncate; anal sinus deep, parietal callus pad thick, columella heavily calloused;

sculpture of very fine, close spiral lirae, crossed by sinuous growth lines, some coarser than others; light reddish-brown, apex paler; length 9 mm.

Description: Claviform, spire acuminate, nearly twice length of aperture, base truncate, aperture oblong, small; whorls moderately convex, periphery below midline; labrum moderately thick, smooth inside, no stromboid notch; anal sinus deep, U-shaped, occupying lower two-thirds of shoulder slope; siphonal notch feebly impressed; columella with a thick callus pad, parietal region with a thick node of callus, partly constricting anal sinus. Sculptured by very fine, close spiral lirae, about 30 on penultimate whorl, crossed by sinuous growth lines, some of which are coarse enough to suggest incipient axial ribs.

Protoconch somewhat papillate, smooth, about two whorls, but limits not clear in available material. Teleoconch whorls about 5.

Colour light reddish brown, protoconch pale.

Dimensions: 9,6 × 3,3 mm (holotype); 8,3 × 3,0 mm (paratype 1).

Distribution: Jeffreys Bay to Port Shepstone.

Type material: Holotype N.M. A3773/T2052, Shelly Beach, just south of Port Shepstone, NATAL, leg. Mrs R. Cock. Paratype 1, same data, in coll. Mrs R. Cock. Paratype 2, N.M. A2829/T2077, Jeffreys Bay, EASTERN CAPE, leg. Mrs. C. Connolly. Paratype 3, N.M. 6940/T2076, Port Shepstone, NATAL, leg. H. Burnup.

Remarks: Paracuneus cockae sp. nov. is allied to *P. platystoma* (Smith, 1877) but lacks shoulder nodules and has finer spiral lirae. '*Drillia*' *simplex* Turton, 1932, from Port Alfred, has similar spiral striae, but a lower spire and distinct axial ribs.

Genus *Tritonoturris* Dall, 1924

Type species (original designation): *Clathurella robillardi* H. Adams, 1869 = *Clathurella elegans* Pease, 1860

South African members of this genus were placed by Barnard (1958) in the genus *Philbertia* Monterosato, 1885. According to Powell (1966), in *Tritonoturris* the protoconch is a conical, multispiral sinusigera, with diagonally cancellate sculpture, while in *Philbertia* it is a papillate, paucispiral non-sinusigera, with diagonal cancellations on the last whorl only.

'*Philbertia*' *capensis* (E. A. Smith, 1882) was transferred to *Tritonoturris* by Powell (1966), and '*P.*' *natalensis* Barnard, 1958 must accompany it. '*Pleurotomella*' *ida* Thiele, 1925, also appears to be congeneric, although certainly not a synonym of *T. capensis* as claimed by Barnard. Two new species are described here.

Tritonoturris obesa sp. nov. (fig. 31)

Diagnosis: Fusiform, siphonal canal produced, whorls very convex; aperture flaring basally; anal sinus very shallow, curved; axial ribs 7–9, widely-spaced, orthocline, obsolete below suture; spiral lirae close, alternating in strength, rendering granular by fine axial threads, which form curved plicules below suture; pale buff; length 26 mm.

Description: Fusiform, spire about 0,59 of total length, siphonal canal produced, tapering, whorls strongly convex, with periphery slightly above middle, early whorls shouldered, later ones not. Aperture with greatest width at its base, labrum thin, with a very shallow, curved, weakly L-shaped anal sinus at suture; internal margin of labrum weakly lirate, flaring at base; labium not calloused. Sculpture of widely spaced axial ribs and close, granular spiral lirae; axial ribs 7–9 in number, orthocline, initially extending from suture to suture, later evanescent below suture and on base of body whorl; spiral lirae increasing by interpolation from two on first teleoconch whorl to about 20 on penultimate whorl, these being alternately weaker and stronger; base of body whorl and rostrum with about 22 lirae; all are rendered granular by fine axial threads which form a series of curved granular plicules below suture. Colour very pale buff, with traces of two bands on the body whorl.

Protoconch broken, at least two whorls, diagonally cancellate, diameter about 0,6 mm; teleoconch whorls about eight in number.

Dimensions: 25,8 × 11,4 mm (holotype); 10,2 × 4,6 mm (paratype).

Type material: Holotype N.M. 3764/T2041, Réunion Rocks, between Durban and Isipingo, NATAL, leg. C. W. Alexander, H. Burnup coll. Paratype A2147/T2042, Durban Bluff, NATAL, a juvenile, leg. H. Burnup.

Remarks: Tritonoturris obesa is very closely related to *T. elegans* (Pease, 1860) (= *Clathurella robillardi* H. Adams, 1869) from Hawaii and Mauritius. It differs from *T. elegans* in its rounded, non-shouldered whorls, coarser spiral sculpture, more regular and less varicose axial ribs, and longer siphonal canal. *T. paucicostata* (Pease, 1860) from Hawaii has similar sculpture to *T. elegans*, and is even narrower. *T. amabilis* (Hinds, 1843) from the Straits of Macassar is closer in shape to *T. obesa*, but has fewer axial ribs, which do not evanesce at the suture, and the colour is different. *T. menecharmes* (Melvill, 1923) from Mauritius is narrower with fewer and stronger spiral lirae, which become spinose where they cross the axial ribs.

Tritonoturris phaula sp. nov. (fig. 34)

Diagnosis: Fusiform, siphonal canal fairly short, whorls convex, barely shouldered, anal sinus deep, U-shaped; sculpture cancellate, with sharp nodules at intersections, axial ribs 11–15 on body whorl, extending to suture and to base, 3 main spiral cords per whorl; light brown with a reddish-brown band around base of body whorl; length 8 mm.

Description: Fusiform, spire longer than aperture, siphonal canal fairly short and oblique, whorls convex, with a slight shoulder, shoulder slope shallowly concave, its sutural margin rising rather high up preceding whorl and crenulated by the axial ribs. Labrum fairly thick, margin crenulated but not dentate, anal sinus deep, U-shaped, labial callus thin, forming at most only a slight parietal pad. Sculpture cancellate; axial ribs sharp, with sloping sides, extending to sutures and onto base, about 10–13 on first whorl, increasing to 11–15 on last whorl; spiral cords sharp, almost as strong as axial ribs, forming acute nodules where they cross the latter, 2 in number on first whorl, with a third one developing above the suture, so that later whorls are tricarinate; a weak lira is present on the shoulder slope; body whorl with 7–8 cords, plus 5–7 tubercular lirae on the rostrum; interstices with pliculate growth striae.

Light brown with a reddish-brown band around body whorl at parietal level, sometimes bordered above by a cream line; anal sinus sometimes reddish brown, leaving an occasional faint subsutural blotch with growth.

Protoconch narrowly conical, 4 whorls, initially smooth, then diagonally cancellate, except for last whorl which bears a median keel, with curved axial plicules above and below; basal diameter 0,6 mm. Teleoconch whorls five.

Dimensions: 7,7 × 3,7 mm (holotype); 8,7 × 4,0 mm, 8,0 × 3,8 mm.

Distribution: FALSE BAY to NATAL.

Type material: Holotype N.M. A5297/T2097, East London, leg. Mrs C. Connolly. Paratype 1, N.M. A1554/T2085, Shelly Beach, near Port Shepstone, leg. R.K.; paratypes 2–4, N.M. 3100/T2087, Port Shepstone, leg. H. Burnup; paratype 5, N.M. A1552/T2089, Nthlonyane, Transkei, leg. R.K.; paratype 6, N.M. 1529/T2094, Xora, Transkei, leg. R.K.; paratypes 7–29, N.M. A1860/T2090, East London, leg. Mrs C. Connolly; paratypes 30–31, N.M. A1522/T2086, Gonubie, leg. R.K.; paratypes 32–35, N.M. A1553/T2092, Jeffreys Bay, leg. R.K.; paratypes 36–37, N.M. A2819/T2093, Cape Agulhas, leg. Mrs C. Connolly; paratypes 38–39, N.M. A2818/T2088, off Macassar Beach, False Bay, 70–80 ft, leg. C. Connolly; paratypes 40–51, N.M. A1861/T2091, same data as last; paratypes 52–91, N.M. A1833/T2084, Simonstown, False Bay, dredged, leg. C. Connolly.

Remarks: Tritonoturris phaula has previously been confused with *T. capensis*, which it closely resembles. It is probably this species which Barnard (1958: 118) referred to as a 'squat form' of *T. capensis*; E. A. Smith determined some of Burnup's specimens as a dwarf form of the same species. *T. capensis* has much more strongly shouldered whorls, a proportionally longer siphonal canal and attains a larger size. In shape *T. phaula* approaches *T. ida* (Thiele, 1925), but differs in its more numerous spiral cords, in the axial ribs reaching the suture and in the granulose basal lirae. From *T. natalensis* (Barnard, 1958) it differs in its more numerous axial ribs, which extend onto the base, in the fewer lirae on the rostrum and in the concave subsutural region.

Genus *Isodaphne* Laseron, 1954

Type species (original designation): *Isodaphne garrardi* Laseron, 1954

While Powell (1966) regarded *Isodaphne* as monotypic, Shuto (1971) considered *Daphnella perfragilis* Schepman, 1913, to belong to this genus. The following species is here referred to *Isodaphne* on account of its general resemblance to *I. perfragilis*.

Isodaphne albolineata sp. nov. (fig. 32)

Diagnosis: Fusiform, whorls with a strong median keel, body whorl with a feeble second keel, rest of surface with fine spiral lirae; translucent, suffused with light brown, keels pale; length about 18 mm.

Description: Fusiform, aperture slightly longer than spire; spire whorls with a median keel, shoulder slope gently concave, basal slope straight; body whorl weakly bicarinate, base tapering, rather produced; anal sinus shallow, subsutural, forming a sinuous L-shape, labrum thin, slightly incurved, smooth inside, labium simple, columella long and straight, meeting paries at a slight angle, labial callus uniform, well defined, without a parietal nodule. Early whorls smooth save for fine growth lines and the sharp median spiral keel; from about the 3rd whorl weak spiral lirae develop and growth lines coarsen; penultimate whorl with 9–12 thin spiral lirae basally, crossing fine irregular axial riblets, anterior part of shoulder slope smoother, with finer, much weaker spiral threads; peripheral keel weaker on body whorl, which bears a second very feeble keel at the level of suture of the labrum; body whorl anterior to periphery with 44–56 thin spiral lirae, pricked by pliculate growth lines.

Translucent white, suffused with light brown, showing as axial lines in places and forming sinuous flames on the shoulder slope; keels paler than ground colour, forming two white lines on body whorl; labial callus white, protoconch yellowish.

Protoconch damaged apically, 2½ whorls remaining; each whorl sculptured by curved subsutural plicules and diagonally cancellate threads; basal diameter about 0,7 mm. Teleoconch whorls about 5½.

Dimensions: 17,7 mm × 7,1 mm (holotype).

Distribution: Known only from off Monte Belo, Limpopo River mouth, SOUTHERN MOZAMBIQUE, in 230 fathoms, which is here designated as the type locality.

Type material: Holotype G2520/T2096, trawled off Mozambique, don. Mrs H. Boswell. Paratype (worn) A70/T2099, trawled off Monte Belo, 230 fathoms, leg. G. Scott.

Remarks: Isodaphne albolineata is closely allied to *I. perfragilis* (Schepman, 1913) from Indonesia, but has a much stronger shoulder keel and a weak second one on the body whorl. '*Mangilia*' *tetartemoris* Melvill, 1910, from the Persian Gulf is also somewhat similar and probably congeneric, but has distinct, widely spaced axial ribs.

Genus *Kermia* Oliver, 1915

Type species (original designation): *Kermia benhami* Oliver, 1915

This genus has not previously been reported from southern Africa.

Kermia tessellata (Hinds, 1843)

Pseudodaphnella tessellata; Hedley, 1922: 353 (references and synonymy), pl. 56, figs 192–193.
Kermia tessellata; Powell, 1966: 135.

Distribution: Polynesia and Indonesia to the Mascarenes, range here extended to Transkei.

Regional locality record: TRANSKEI: Mzamba, eastern Pondoland (N.M.: J. P. Marais). ZULULAND: Off Sordwana Bay, *ex pisce* (N.M.: J. P. Marais).

Genus *Daphnella* Hinds, 1844

Type species (subsequent designation Herrmannsen, 1847): *Pleurotoma lymneiformis* Kiener, 1840.

Daphnella (*Daphnella*) *lymneiformis* (Kiener, 1840)

Pleurotoma lymneiformis Kiener, 1840: 62, pl. 22, fig. 3. Type locality: Mauritius.
Daphnella lymneiformis; Cernohorsky, 1972: 190, pl. 54, fig. 11.
Daphnella botanica Hedley, 1922: 326, pl. 53, figs 157–159. Type locality: Botany Bay, New South Wales.

Distribution: Queensland to Fiji, range here extended to Natal.

Regional locality records: NATAL: Durban Bay, dredged (N.M.: B. J. Young). ZULULAND: off Sordwana Bay, 100 m, juv. (N.M.: C.S.I.R.).

Remarks: Although the name *Daphnella lymneiformis* appears to have been conventionally applied to the Caribbean *D. decorata* (C. B. Adams, 1850), Kiener gave an Indian Ocean type locality, and his description and figure agree perfectly well with the Natal specimen here recorded, and with an example from Fremantle, Western Australia. I therefore follow Cernohorsky (loc. cit.) in restoring the name *lymneiformis* to the Indo-Pacific species for which it was founded. Hawaiian specimens received from D. Thaanum as the unfigured and lost *Daphnella maculosa* Pease, 1860, also appear to represent the present species.

Daphnella (*Daphnella*) *delicata* (Reeve 1846)

Pleurotoma delicata Reeve, 1846: pl. 34, fig. 310.
Daphnella delicata; Tryon, 1884: 301, pl. 26, fig. 80; Orr Maes, 1967: 142, pl. 16K.

Distribution: Polynesia and Japan to Cocos Keeling Islands, here extended to Mozambique.

Regional locality record: NORTHERN MOZAMBIQUE: Lunga Bay, under rock slab on muddy sand among *Thalassodendron*, inshore (N.M.: K. Grosch).

Daphnella (*Hemidaphne*) *rissoides* (Reeve, 1843)

Hemidaphne rissoides; Hedley, 1922: 333 (references and synonymy); Orr Maes, 1967: 42, pl. 16J.

Distribution: Polynesia and Queensland to the Red Sea, range here extended to Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: off Majumbi and Quirimba Is. (N.M.: A. Jenner); Nacala Bay, under encrusted rock in area of coral and *Thalassodendron*, L.S.T.; Goa Is., Mozambique Bay, under dead coral amongst *Thalassodendron*, 1 ft above L.S.T.; Memba Bay, among rocks in area of *Thalassodendron* and soft sand, 1 ft above L.S.T.; Conducia Bay under rock, in fine sand among rocks and *Thalassodendron*, 2 ft above L.S.T. (N.M.: K. Grosch).

Daphnella (*Hemidaphne*) *cyclophora* (Deshayes, 1863)

Hemidaphne cyclophora; Hedley, 1922: 332 (references), pl. 54, fig. 168.

Distribution: Japan and Queensland to Réunion Island (type locality), range here extended to Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: Lunga Bay, under rock slabs on muddy sand among *Thalassodendron*, inshore (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: between Zavora and Inhaca Island, *ex pisce* (N.M.: C. P. Fernandes).

Genus *Eucyclotoma* Boettger, 1895

Type species (subsequent designation Cossmann, 1896): *Clathurella bicarinata* Pease, 1867.

Eucyclotoma trivaricosa (Von Martens, 1880) (fig. 33)

Daphnella trivaricosa Von Martens, 1880: 228, pl. 20, fig. 1; Tryon, 1884: 305, pl. 25, fig. 54; Melvill, 1917: 194. Type locality: Mauritius.

Distribution: Persian Gulf and Mauritius, range here extended to Natal.

Regional locality records: NORTHERN MOZAMBIQUE: Conducia Bay (N.M.: K. Grosch). NATAL: Durban (N.M.: W. Falcon).

Genus *Mitrolumna* Bucquoy, Dautzenberg & Dolfuss, 1883

Type species (original designation): *Mitra olivoidea* Cantraine, 1835.

Mitrolumna stepheni (Melvill & Standen, 1897) **comb. nov**

Columbella (*Seminella*) *pacei* Melvill & Standen, 1896 (*non* E. A. Smith, 1895): 275, pl. 9, fig. 5. Type locality: Lifu.
Columbella (*Seminella*) *stepheni* Melvill & Standen, 1897: 407 (*nom. subst.*)
Columbella stepheni; Hervier, 1899: 386.
Mitromorpha (*Lovellona*) *stepheni*; Orr Maes, 1967: 143, pl. 15 D, text fig. 4 F (radula).
Columbella dibolos Barnard, 1964: 17, fig. 1f (**syn. nov.**). Type locality: Off Umdloti, Natal, 40 fathoms.

Distribution: Polynesia to Cocos Keeling Island (Orr Maes) and Natal (Barnard).
Additional records: ZULULAND: off Kosi Bay, 50 m, and off Sordwana Bay, 50 and 100 m (N.M.: C.S.I.R., bottom samples); *ex pisce* off Sordwana Bay (N.M.: J. P. Marais).
Remarks: Orr Maes (loc. cit.) showed this species to possess an apomorphic turrid radula. The twin columella teeth enable it to be referred to *Mitrolumna*, a genus previously known only from the Mediterranean and the Galapagos Islands, but shown by Cernohorsky (1975) to occur in southern Australia. Whereas these teeth were not mentioned by Melvill & Standen ('columella planata'), a series of 12 topotypes (N.M.: F8404) show their absence to be a juvenile character. An excellent photograph of an adult has been given by Orr Maes.

Barnard's *Columbella dibolos* was based on broken and worn juveniles, but is clearly referable to *Mitrolumna stepheni*.

Class BIVALVIA

Family Mytilidae

Genus *Lithophaga* Röding, 1798

Type species (monotypy): *L. mytuloides* Röding, 1798 [= *Mytilus lithophagus* Linné, 1780].

Key to genus *Lithophaga* in South Africa and Mozambique:

1. Shell without a chalky incrustation; vertical striae present . . . . . . (2)
   Shell with a chalky incrustation but no vertical striae . . . . (3)
2. Colour reddish-black to dark reddish-brown, cylindrical, with fine growth lines **teres**
   Colour deep yellowish-brown, less cylindrical, coarse growth lines at intervals; vertical striae very fine . . . . **zitteliana**
   Colour deep brown, shape resembling *teres* but somewhat shorter, vertical striae rather coarse . . . . **cylindrica**
3. Chalky deposit sculptured into a plume-like appearance, extending beyond posterior margin . . . . (4)
   Chalky deposit smooth, not markedly extending beyond posterior margin . (5)
4. Posterior end acutely tapering with a posterior umbonal ridge, chalky deposit bordered by a distinct groove . . . . **mucronata**
   Posterior end rounded, not very tapering, no posterior umbonal ridge and only a slight groove bordering the callus deposit . . . . **lima**
5. Shell tapering more or less equally at each end, greatest width submedian **obesa**
   Anterior end wider and more tumid than posterior . . . . . . **nasuta**

Lithophaga (*Lithophaga*) *teres* (Philippi, 1846)

Modiola teres Philippi, 1846: 148, pl. 1, fig. 3, Type locality: Pacific Ocean.
Lithophaga teres; Lamy, 1937: 111 (references and synonymy); Orr Maes, 1967: 156, pl. 20, fig. E; Habe & Kosuge, 1970: 130, pl. 48, fig. 2.
Modiola gracilis Philippi, 1847 (*non* Von Klipstein, 1845): 117; *idem*, 1847a: 21, pl. 2, fig. 6. Type locality: China.
Lithodomus gracilis; Von Martens, 1879: 741.

Distribution: Japan and Polynesia to the Red Sea and northern Mozambique.

Regional locality records: NORTHERN MOZAMBIQUE: Quirimba Island (Von Martens); Conducia Bay, boring in rocks in muddy areas, 5–6 ft above L.S.T., and Mozambique Bay, south east of Cabaceira Pequena, in sedimentary rock in muddy area, 4 ft above L.S.T. (N.M.: K. Grosch).

Remarks: Modiola gracilis was evidently based on a larger, paler, and slightly less cylindrical specimen than *M. teres*. Some of the present examples could be referred to either.

Lithophaga (*Lithophaga*) *zitteliana* Dunker, 1882

Lithophaga zitteliana Dunker, 1882*a*: 226, pl. 14, figs 1–2, 8–9; *idem*, 1882: 18, pl. 6, figs 17–18; Lamy, 1937: 108 (references); Kira, 1962: 128, pl. 46, fig. 13. Type locality: Japan.

Distribution: Japan and New Caledonia to Mauritius and the Gulf of Aden and northern Mozambique.

Regional locality record: NORTHERN MOZAMBIQUE: Conducia Bay (N.M.: K. Grosch).

Remarks: This single specimen resembles *L. teres*, but is yellowish-brown in colour, with coarser growth lines and a less cylindrical form.

Lithophaga (*Lithophaga*) *cylindrica* (Krauss, 1848) (fig. 36)

Modiola cylindrica Krauss, 1848: 21, pl. 2, fig. 2; Turton, 1932: 227. Type locality: Natal coast.
Lithophaga cylindrica; Barnard, 1964: 403.

Distribution: Zululand to the eastern Cape.

Locality records: ZULULAND. Umpangazi (Barnard). NATAL: Umkomaas (N.M.: H. Burnup); Mtwalume (Barnard). EASTERN CAPE: Kei River mouth (N.M.: Mrs H. Jeffreys); Port Alfred (Turton).

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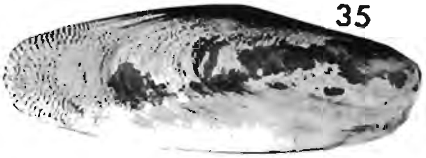

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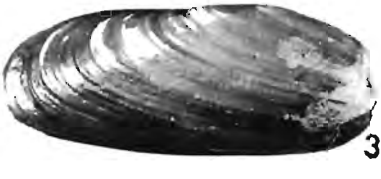

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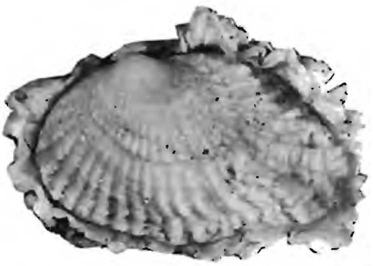


Figs 35–37. 35, *Lithophaga lima* (Lamy, 1919), Santa Carolina Island, 59,1 × 21 mm. 36, *L. cylindrica* (Krauss, 1848), Kei River mouth, 30,1 × 12,7 mm. 37, *Petricola madreporica* (Jousseaume, 1895), Lunga Bay, 24,4 × 16,8 mm.

Remarks: Several writers have queried the validity of this rare species; unfortunately the limited material available does not permit any final decision. However, its reddish-brown adult coloration (yellowish-brown in juveniles), markedly cylindrical form and coarser vertical striae seem to separate it from *L. teres* and *L. zitteliana*, the only two allied species known from south-eastern Africa.

Lithophaga (*Diberus*) *lima* (Lamy, 1919) (fig. 35)

Dactylus lima (Jousseaume M/S) Lamy 1919: 257. Type locality: Djibouti and Aden.
Lithophaga (*Leiosolenus*) *lima*; Lamy, 1937: 119; Kira, 1962: 128, pl. 46, fig. 12.
Lithophaga (*Diberus*) *barnardi* Boshoff, 1965: 119, pl. 6, fig. 23, pl. 7, figs 1, 2 (**syn. nov.**). Type locality: Inhaca Island.
Lithophaga nasuta (*non* Philippi); Dunker, 1882: 5, pl. 1, figs 5, 6, pl. 2, figs 7, 8.

Distribution: Japan and the Gulf of Aden to southern Mozambique.

Regional locality records: SOUTHERN MOZAMBIQUE: Inhaca Island, boring in live *Favites* coral in 4 metres (Boshoff); Santa Carolina Island, boring in a brain coral (M.M.: Mrs E. Roscoe).

Remarks: Unfortunately no paratypes or topotypes of *Lithophaga barnardi* appear to have reached the Natal Museum. However, a large specimen (59,1 × 21 × 16,1 mm) from Santa Carolina Island, although more elongate and posteriorly tapering than the shells shown in Boshoff's photographs, clearly exhibits the granular, divaricating calcareous ridges characteristic of *L. barnardi*. This specimen agrees very well with the figures of *L. lima* given by Dunker and Kira, and with the description of Lamy (loc. cit.). The small differences in shape between the Inhaca and Santa Carolina specimens scarcely warrant recognition of two species, and are probably influenced by age and ecological factors.

Lithophaga (*Diberus*) *mucronata* (Philippi, 1846)

Modiola mucronata Philippi, 1846: 150, pl. 1, fig. 8; Krauss, 1848: 21. Type locality: Java.
Lithophaga mucronata; Dunker, 1882: 17.
Lithophaga (*Diberus*) *mucronata*; Boshoff, 1965: 118.
? *Lithodomus plumula* (*non* Hanley); Von Martens, 1879: 741.

Distribution: Indonesia to the Red Sea and Natal.

Regional locality records: SOUTHERN MOZAMBIQUE: Santa Carolina Island (N.M.: R.K., Mrs H. Jeffreys); north of Benguera Island, 40 ft, dredged (N.M.: R.K. & E. Roscoe); Inhaca Island (N.M.: P. Boshoff; Boshoff, 1965). NATAL: in *Chama* '*gryphoides*' [probably *C. iostoma* Conrad] (Krauss, 1848); off Durban, trawled in 71 m (N.M.: Oceanographic Research Institute, Durban).

Remarks: Von Martens' record (loc. cit.) of the West American *L.* (*D.*) *plumula* was presumably based on this species.

Lithophaga (*Leiosolenus*) *obesa* (Philippi, 1847)

Modiola obesa Philippi, 1847: 118; *idem*, 1847a. 19, pl. 2, fig. 2. Type locality: China?
Lithodomus obesa; Von Martens, 1879: 741.
Lithophaga obesa; Dunker, 1882*a*: 6, pl. 1, figs 9, 10, pl. 3, figs 1, 2.
Lithophaga (*Leiosolenus*) *obesa*; Lamy, 1937: 118 (references); Boshoff, 1965: 116.

Distribution: China and Polynesia to the Gulf of Aden and Natal. Recorded from Mozambique by Dunker (1882).

Regional locality data: SOUTHERN MOZAMBIQUE: Inhaca Island (N.M.: R.K.; Boshoff (1965)). NATAL: Umkomaas (N.M.: H. Burnup).

Lithophaga (*Leisolenus*) *nasuta* (Philippi, 1846)

Modiola nasuta Philippi, 1846: 149, pl. 1, fig. 2.
Lithodomus nasuta; Von Martens, 1879: 741. Type locality: Pacific Ocean.
Lithophaga (*Leiosolenus*) *nasuta*; Boshoff, 1965: 117 (Mozambique references).
Lithophaga (*Lithophaga*) *nasuta*; Prashad, 1932: 77 (references).
Lithophaga nasuta; Orr Maes, 1967: 67, pl. 20, fig. G.

Distribution: Japan and the Philippines to Natal.
Regional locality data: NORTHERN MOZAMBIQUE: Quirimba Island (Von Martens); Lunga Bay, in grey sedimentary rock, 3 ft above L.S.T. (N.M.: K.Grosch). SOUTHERN MOZAMBIQUE: Santa Carolina Island (N.M.: E. Roscoe); Inhaca Island (N.M.: R. K., P. Boshoff; Boshoff (1965)). ZULULAND: Sordwana Bay (N.M.: Zoology Department, Natal University); NATAL: Durban Bay, in sandstone slab at L.S.T. (N.M.: R.K.).

Family Psammobiidae

Genus *Hiatula* Modeer, 1793

Hiatula Modeer, 1793. 178; Type species (subsequent designation Stoliczka, 1871) *Solen diphos*, Linné, 1771.
Soletellina Blainville, 1824: 350. type species (monotypy): *S. radiata* = *Solen diphos* Linné, 1771.

Keen (1969: 691) overlooked Stoliczka's designation of a type species for *Hiatula* Modeer, 1793, and on the grounds of a later type designation, transferred that taxon to the Myidae, utilizing *Sanguinolaria* Lamarck, 1799, as the nominate genus for the present complex. Kuroda *et al.* (1971: 443) have rectified the position.

While *Psammotellina* Fischer, 1887, was treated by Keen as a subgenus of *Hiatula*, *P. capensis* Sowerby, 1889, is certainly not congeneric, differing in its poorly-developed nymphs, very shallow, free pallial sinus and distinctive cardinal teeth. Unfortunately the internal structure of the type species of *Psammotellina*, *P. ambigua* (Reeve, 1857) from the tropical western Pacific, does not appear to have been described.

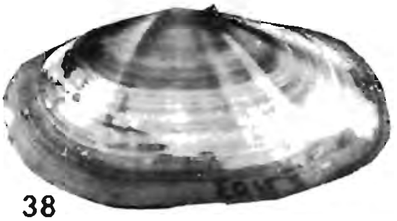
In addition to the three species of *Hiatula* here admitted to the southern African fauna list, a fourth species, represented by chalky valves in poor condition from Lake St Lucia (Zululand), remains to be identified.

Subgenus *Hiatula* s.s.

Hiatula (*Hiatula*) *clouei* Bertin, 1880 (figs 38–39)

Hiatula clouei Bertin, 1880: 94, pl. 5, figs 6a, b. Type locality: Nossi Bé, Malagasy Republic.
Psammotaea donacioides (*non* Reeve), E. A. Smith, 1903: 398.
Psammotaea lunulata (*non* Deshayes); Barnard, 1964: 534 (*partim*); *Boshoff*, 1965: 181, pl. 6, fig. 4.
Soletellina lunulata; Day, 1974: 92.

Distribution: Malagasy Republic, range here extended to Mozambique.
Regional locality records: NORTHERN MOZAMBIQUE: Conducia Bay, muddy sand outside mangroves, 5 ft above L.S.T. (N.M.: K. Grosch); Mozambique Island, dead (N.M.: R.K.). SOUTHERN MOZAMBIQUE: Santa Carolina Island (N.M.: R.K., Mr & Mrs R. Eastwood), Bangue Island (N.M.: Mrs E. Roscoe); Benguera Island (N.M.: R.K.); Morrumbene estuary, near Inhambane (N.M.: C. Appleton; Day (1974)); Inhaca Island (N.M.: R.K., P. Boshoff, and Boshoff (1965)); Maputo (Lourenço Marques) (N.M.: R.K.). ZULULAND: Kosi Bay (N.M.). NATAL: Durban Bay (N.M.: R.K., H. Burnup, W. Falcon).



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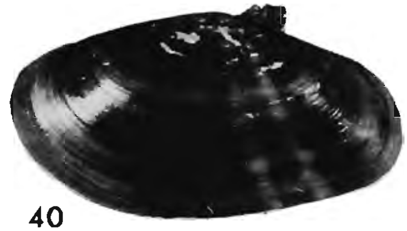

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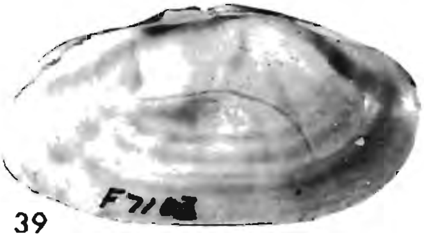

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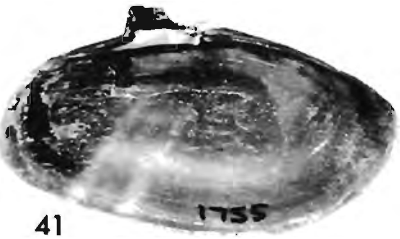

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Figs 38–41. 38–39, *Hiatula clouei* Bertin, 1880, Santa Carolina Is., 36,2 × 18,7 mm. 40–41, *H. lunulata* (Deshayes, 1855), Umgeni River, 36,3 × 19 mm.

Remarks: Hiatula clouei appears to have been completely overlooked by subsequent authors, even those working on the Malagasy Mollusca. It has been confused with *H. lunulata* (Deshayes, 1855), a euryhaline species which replaces it within the heads of estuaries and in lagoons. *H. clouei* is restricted to sand flats at the mouths of estuaries and in open sheltered bays. *H. lunulata* is more trigonal in outline, with a more tapering, sloping posterior end, a thicker shell, a persistent periostracum (in *clouei* this is usually partly deciduous), more prominent nymphs and an apically rounded pallial sinus (apically declivous in *clouei*). Confusion has also arisen between *H. clouei* and the South Australian *H. donacioides* (Reeve, 1857); the differences between the two were clearly stated by Bertin.

H. clouei is a variable species, both in colour and in proportions. Although typically more or less deep violet, with two thin posterior rays, pure white examples occur. The proportion of height/length may vary in extreme cases, from 0,64 to 0,52.

Hiatula (*Hiatula*) *lunulata* (Deshayes, 1855) (figs 40–41)

Capsa (*Capsella*) *lunulata* Deshayes, 1855: 349. Type locality: Philippine Islands.
Capsella lunulata; Reeve, 1857: pl. 2, fig. 12.
Hiatula (*Psammotaea*) *lunulata*; Bertin, 1880: 97.
Psammotaea lunulata; Smith, 1903: 398; Turton, 1932: 251; Barnard, 1964: 534 (*partim*).

Distribution: Philippines and Ceylon to the Transkei and eastern Cape.

Regional locality records: NORTHERN MOZAMBIQUE: Conducia Bay (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Govuru River, about 10 miles north of Bartholomeu Dias estuary (N.M.: E. Roscoe). NATAL: Durban (N.M.: H. Burnup, and Smith (1903); Umgeni River (N.M.: H. Burnup); Amahlongwana Lagoon (N.M.: Burnup); Kelso (N.M.: R.K.). TRANSKEI: Xora River (N.M.: R.K.). EASTERN CAPE: Port Alfred, 'a single broken valve' (Turton, (1932)).

Hiatula aureocincta (Von Martens, 1879) (fig. 42)

Sanguinolaria aureocincta Von Martens, 1879: 743. Type locality: 'Mossambique' = Mozambique Island.

This species was never figured, but the holotype is preserved in the Zoologisches Museum, Berlin, and a photograph of the right valve is here reproduced by kind courtesy of Dr R. Kilias. No examples of this species are available to me, and the question of its subgeneric position must remain an open one. In shape it is very similar to some American species of subgenus *Sanguinolaria* Lamarck, 1799, but *Psammosphaerica* Jousseaume, 1894, from the Red Sea, which supposedly differs from *Sanguinolaria* in its non-gaping valves, is another alternative.

Family Petricolidae

Genus *Petricola* Lamarck, 1801

Barnard (1964) in his discussion of the genus, reports two species from South Africa, and a third from Mozambique. A fourth record is here added from northern Mozambique, and the ranges of two species are extended within the region.

Key to genus *Petricola* in South African and Mozambique:

1. Radial ribs divaricating . . . . (2)
   Radial ribs not divaricating . . . . (3)
2. Umbones anteriorly directed; nymphs sunken, simulating posterior lateral teeth; shell thick and rather chalky, with calcareous deposits on posterior radial ribs . . . . **divergens**
   Umbones dorsally directed; nymphs not sunken; shell thin, not chalky, without calcareous deposits posteriorly . . . . **ponsonbyi**
3. Valves subequal, edges normal; radial ribs rather weak and close, not scaly; interior usually with a brown blotch posteriorly . . . . **bicolor**
   Right valve conspicuously larger than left, with foliated margin; radial ribs sharp and well spaced, bearing imbricate scales posteriorly; without a brown posterior blotch . . . . **madreporica**

Petricola (*Petricola*) *ponsonbyi* Sowerby, 1892

Petricola ponsonbyi Sowerby, 1892: 61, pl. 3, fig. 68; Barnard, 1964: 513. Type locality: Port Elizabeth.
Petricola bicolor (*non* Sowerby); Boshoff, 1965: 170, pl. 11, fig. 3 (? *partim*).

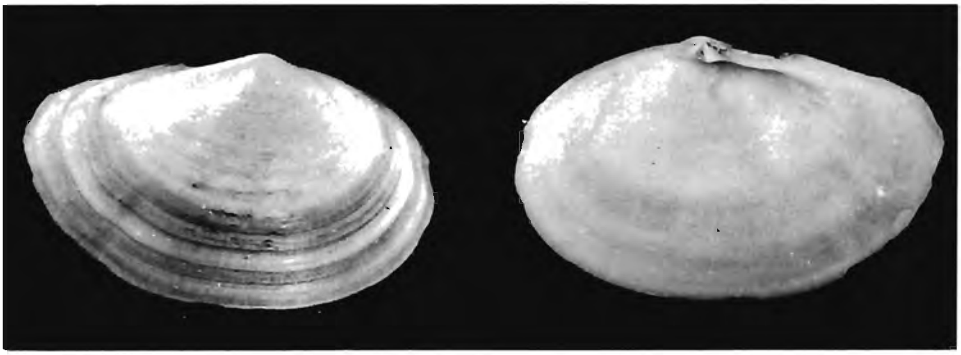

Fig. 42, *Hiatula aureocincta* (Von Martens, 1879), holotype, Z.M.B. Moll. 7581: 43,3 × 26,4 mm. Courtesy of Dr R. Kilias.

Distribution: Still Bay to Post Alfred (auct.), here extended to Inhaca Island.
Additional locality records: TRANSKEI: Coffee Bay (N.M.: R.K.). NATAL: Sezela (N.M.: H. Burnup); Durban (N.M.: H. Burnup). SOUTHERN MOZAMBIQUE: Inhaca Island (N.M.: P. Boshoff).
Remarks: Three somewhat worn valves from Inhaca Island, presented as *P. bicolor* by Boshoff, retain divaricate sculpture, showing them to be *P. ponsonbyi*; of the three valves figured by Boshoff (loc. cit.) the specimen on the upper right might be *P. bicolor*, but that on the lower right is certainly *ponsonbyi*.

Petricola (*Petricola*) *divergens* (Gmelin, 1791)

Venus divergens Gmelin, 1791: 3269. Type locality: Islands of Central America, here emended to the Moluccas, Indonesia.
Petricola (*Choristodon*) *divergens*; Prashad, 1932: 264 (references and synonymy); Barnard, 1964: 514.
Petricola divergens; Habe, 1951: 96, pl. 15, figs 6, 11; Kira, 1962: 166, pl. 58, fig. 28; Boshoff, 1965: 170.
Venus lajonkari (*sic*., *non. lajonkairei* Payraudeau); Sowerby, 1897: 25.

Distribution: Indo-West Pacific to southern Mozambique, range here extended to Natal.
Regional locality data: NORTHERN MOZAMBIQUE: Conducia and Lunga Bays (N.M.: K. Grosch). SOUTHERN MOZAMBIQUE: Inhaca Island (N.M.: R.K., P. Boshoff; Boshoff (1965)). NATAL: Durban (N.M.: H. Burnup); Umkomaas (N.M.: H. Burnup); Sezela (N.M.: Mrs A. Crossley).
Remarks: While the actual specimen sent to J. H. Ponsonby and recorded by Sowerby (1897) as the Mediterranean *Petricola* (*Lajonkairea*) *lajonkairei* (Payraudeau, 1826) does not appear to be present in the N.M. collection, two examples so identified by Ponsonby are clearly immature *P. divergens*.

Petricola (*Rupellaria*) *bicolor* Sowerby, 1854

Petricola bicolor Sowerby, 1854: 776, pl. 166, fig. 22; *idem*, 1874: pl. 3, fig. 17, fig. 22; Barnard, 1964: 513 (references and synonymy). Type-locality unknown, here designated as Table Bay.

Distribution: South West Africa to Natal.
Locality data: SOUTH WEST AFRICA: Cape Cross Bay (N.M.: O. Davies); Walvis Bay (N.M.: C. Connolly); Henties Bay (N.M.: O. Davies); Sandwich Harbour (N.M.: C. T. Stuart). TABLE BAY: Milnerton Beach (N.M.: R.K.). FALSE BAY: Strandfontein and Glencairn (N.M.: C. Connolly). CAPE AGULHAS REGION: Still Bay (Barnard). EASTERN CAPE: Jeffreys Bay (N.M.: R.K.); Port Alfred auct.); East London, (N.M.: M. Latigan). NATAL: Shelly Beach, near Port Shepstone (N.M.: R. Cock); Sezela (N.M.: H. Burnup); Umkomaas (N.M.: H. Burnup); Isipingo (N.M.: W. Falcon); Durban (N.M.: H. Burnup, W. Falcon); 3 miles off Umhlanga Rocks, 12–13 fathoms, one left valve (N.M.: R.K.).
Remarks: P. bicolor bores into soft limestone; in Algoa Bay its empty burrows are commonly inhabited by the mytilid *Gregariella petagnae* (Scacchi, 1832) (= *Modiolus barbatellus* Cantraine, 1835 = *Gregariella simplicifilis* Barnard, 1964). Examples of *P. bicolor* from South West Africa are generally, but not always, more elongated or acutely tapering behind than those from warmer waters.

The specimens recorded from Inhaca Island by Boshoff are discussed above under *P. ponsonbyi*.

Petricola (*Claudiconcha*) *madreporica* (Jousseaume, 1895) (Fig. 37)

Claudiconcha madreporica Jousseaume, 1895: 187. Type locality: Aden.
Petricola (*Claudiconcha*) *madreporica*; Lamy, 1923: 354, text-fig.

Distribution: Gulf of Aden, range here estended to northern Mozambique.

Additional locality record: NORTHERN MOZAMBIQUE: Lunga Bay, Mozambique Province, 'in reef' (N.M.: K. Grosch).

Remarks: This species is remarkable on account of the excessive development of the right valve, whose edges envelop the margins of the left valve.

CO-ORDINATES OF LOCALITIES

Mozambique

Bangue Island: 22°02′S, 35°28′E
Bazaruto Island: 21°40′S, 35°25′E
Benguera Island: 21°53′S, 35°26′E
Chinde: 18°34′S, 36°27′E
Conducia Bay: 14°55′S, 40°41′E
Govoru River: 21°21′S, 35°06′E
Inhaca Island: 26°01′S, 32°58′E
Inhambane: 23°52′S, 35°23′E
Lunga Bay: 15°12′S, 40°32′E
Majumbi Island (Ilha M'Djumbe or Medjumbe): 11°49′S, 40°37′E
Memba Bay: 14°11′S, 40°35′E
Mozambique Island: 16°35′S, 33°59′E
Monte Belo, Limpopo River mouth: 25°12′S, 33°32′E
Morungulu, near Massinga: 23°20′S, 35°25′E
Nacala: 14°30′S, 40°37′E
Ponta Zavora: 24°31′S, 35°11′E
Quelimane: 17°53′S, 36°51′E
Quirimba Island: 12°26′S, 40°37′E
Santa Carolina Island: 21°37′S, 35°20′E

South Africa

Algoa Bay: 33°50′S, 25°50′E
Amahlongwana River: 30°13′S, 30°47′E
Cape Agulhas: 34°52′S, 20°00′E
Cape Hangklip: 34°23′S, 18°50′E
Cape St Blaize: 34°11′S, 22°10′E
Durban: 29°51′S, 31°01′E
Durnford Point: 28°55′S, 31°50′E
East London: 33°02′S, 27°55′E
Glencairn, False Bay: 34°09′S, 18°25′E
Isipingo: 30°00′S, 30°56′E
Kelso: 30°22′S, 30°43′E
Kosi Bay: 26°53′S, 32°55′E
Kwelera (Kwelega): 32°51′S, 28°01′E
Mtwalume: 30°29′S, 30°38′E
Paternoster: 32°49′S, 17°53′E
Port Alfred: 33°36′S, 26°54′E
Port Shepstone: 30°45′S, 30°27′E
Ramsgate: 30°55′S, 30°20′E
Scottburgh: 30°17′S, 30°45′E
Sezela: 30°24′S, 30°40′E
Shelly Beach, near Port Shepstone, Izotscha Dist.: 30°46′S, 30°25′E
Sordwana Bay: 27°32′S, 32°41′E
Still Bay: 34°23′S, 21°27′E
Strandfontein, False Bay: 30°58′S, 17°40′E
Tugela River: 29°14′S, 31°30′E
Umgeni River: 28°38′S, 30°38′E
Umhlanga River: 29°42′S, 31°06′E
Umkomaas: 30°12′S, 30°48′E
Umlalazi Lagoon: 28°57′S, 31°47′E
Umpangazi: 27°39′S, 32°38′E

South West Africa

Cape Cross Bay: 21°43′S, 13°58′E
Henties Bay: 22°08′S, 14°18′E
Sandwich Harbour (Sandfisch Bay): 23°20′S, 14°28′E
Swakopmund: 22°41′S, 14°32′E
Walvis Bay: 22°56′S, 14°29′E

Transkei

Coffee Bay: 31°58′S, 29°09′E
Hole in the Wall: 32°02′S, 29°06′E
Kei River mouth: 32°41′S, 28°23′E
Mbotyi: 31°27′S, 29°44′E
Mzamba: 30°51′S, 29°46′E
Port Grosvenor: 31°23′S, 29°54′E
Xora River mouth: 32°09′S, 28°59′E

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